Reflections On the First Seven Weeks

By Edith Holmes
Of the CW Staff

NEW YORK – Responsive. That's what everyone connected with the trying of the most massive civil antitrust suit ever brought by the government against a private corporation – U.S. vs. IBM – says they want to be.

Judge David N. Edelstein, the sole arbiter in the case, would like a reasonably paced trial and an uncluttered record.

Attorneys for both the government and IBM insist they're only thinking of him in their willingness to comply with his wishes.

And even the witnesses have felt the need to say they're simply interested in giving their best testimony and being helpful to the court.

But to an observer in the courtroom for the better part of the last seven weeks, responsiveness looked more like recalcitrance, and a case that could be reasonably tried in the space of a year looked like it might take two, or perhaps three, or maybe five times longer.

Many incidents in court created this total effect. No one participant seemed responsible for all delays; rather, each principal in the case contributed his own share to lengthening and confusing the trial.

IBM counsel, for example, made extensive corrections to the daily transcripts of the case. Corrections went far beyond rectifying typographical errors and included some editing of remarks, according to the court reporters for the U.S. District Court.

By the time the trial recessed, corrected transcripts made available to the press and public were a full week behind. The court reporters said they had never seen anything like it before. Edelstein finally found it necessary to instruct counsel for both sides to make only typographical corrections and submit all other changes on a sheet attached to each day's transcript.

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COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper Second-class postage paid at Boston, Mass., and additional mailing offices

Price: $12/year July 23, 1975 Vol. IX, No. 30

NEWSPAPER

Majority of Women DPers Find No Job Discrimination

By Catherine Arnst
And Ann Dooley
Of the CW Staff

A majority of women DPers have never met any sexual discrimination and feel competence is now the deciding factor in obtaining promotions, a *Computerworld* survey has found.

But the women were nearly unanimous in crediting the feminist movement with the improvement of their situation in recent years.

Eighteen, or 60%, of the 30 women interviewed answered "no" when asked if they had ever encountered discrimination. Six added this was primarily because their individual companies were good in that respect; others said they may yet encounter problems when they try to advance into management.

The women were chosen from lists of this year's Computer Caravan attendees and an attempt was made to choose from all job categories. Four women in management, seven DP managers, 16 programmers or systems analysts and three keypunch operators were interviewed, with no consensus of opinion found in any occupation.

There were, however, definite trends correlating to the length of time a woman had worked in DP. Eighteen of the 30 had been in the industry for over four years; nine of these claimed they had met discrimination.

Of the 12 who worked less than four years, only three answered affirmatively when asked if they had encountered discrimination.

One woman, who has been in DP for 11 years, said she has encountered a "vast amount" of discrimination and cited her title of "actuary" rather than the higher-ranking "programmer" as just one example.

She has left other jobs because of what she feels is discrimination, she said, and feels she now has no problems because she works in a small firm.

As for opportunities for advancement for women in DP, she said, "If a woman is tough and willing to fight, the sky's the limit. She can either own her own firm, sleep with the boss or just be 10 times as competent as any male.

"It is important for every woman to represent her sex well and for competent women to be highly visible," she added.

A senior officer of a corporation, who has been in DP for 20 years, told CW she has never encountered sexual discrimination and speculated that "many women feel they're being discriminated against unnecessarily, without any reason. Men have a tendency to feel [the feminist movement] is being shoved down their throats."

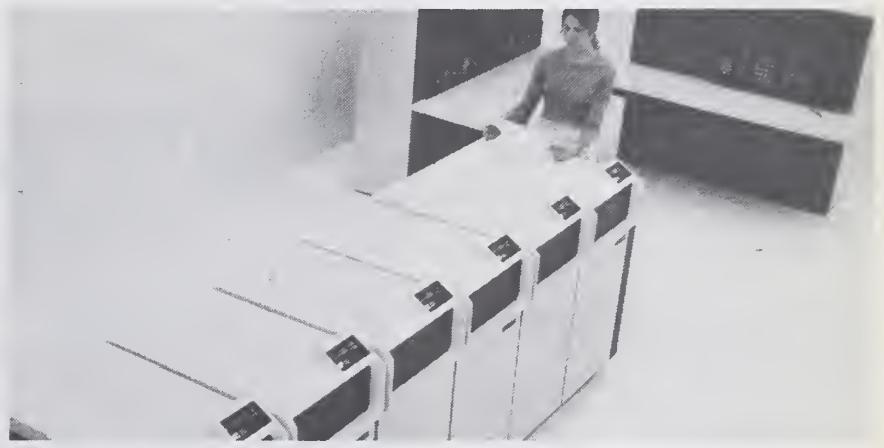
She said the small number of women in advanced positions is because there are not "that many qualified women in the field."

When asked whether she had encountered discrimination, a technology specialist answered, "Are you kidding? Of course."

She has been in DP for 11 years and said she chose the field because she felt it had the best opportunities for women.

But she nevertheless feels women are slighted both in salary and promotions. "I hassle them all the time," she said, "and

(Continued on Page 4)



IBM 3350 Direct Access Device

With 3344, 3350 Drives

IBM Moves to Fixed Disks

By Vic Farmer
Of the CW Staff

WHITE PLAINS, N.Y. – IBM 370/135-and-up users who find they are rarely changing disk packs on part of their disk drive facility should closely evaluate IBM's announcement last week of two moving-head – but fixed media – disk drives, the 3344 and 3350.

For a 3340 user, the 3344 drives effectively cut the storage cost per byte in half; for a 3330 user, use of the 3350 may cut per-byte storage costs from 50% to 70%.

The two-spindle drives boast the highest per spindle data capacity in the company's line, with the 3344 packing in 280M byte/spindle and the 3350 packing in 317.5M byte/spindle.

This compares with the 100M bytes of the 3330-1, 200M bytes of the 3330-11 and 70M bytes of the 3340 with the high-density module.

Both the 3344 and 3350 drives additionally have options that can provide about 1M byte of fixed-head storage/spindle for tasks requiring high-speed access to data such as indexes or job queues, IBM said.

The 3344s attach directly to the 3340 facility and are said to pose few conversion problems for the user. In effect, the 3344 makes up for the high cost per byte of previous Winchester 3340 technology.

A maximum of three 3344s or 3340s may be attached in any combination on a string after the first 3340 unit to provide up to 1.8G bytes of storage, IBM said.

The 3350, on the other hand, can operate at a reduced capacity of 200M byte/spindle in a string of 3330s and does require reformatting of data by the user to gain the 317.5M byte/spindle capacity.

Most performance specifications for both drives are quite similar to

(Continued on Page 2)

Congress Gets Bills to Control Criminal Justice Information

By Nancy French
Of the CW Staff

WASHINGTON, D.C. – Two identical bills have been introduced in the U.S. Senate and House of Representatives to control the collection and dissemination of criminal justice information and to protect the privacy and constitutional rights of the individuals about whom such information has been collected.

Under the bills, only conviction records can be freely distributed to law enforcement agencies. Acquittal and arrest records may be disclosed only for specific purposes and to authorized personnel.

The bills require the sealing of criminal records that are out of date and those not followed by criminal charges or by timely prosecution.

They also provide for a five-year Commission on Criminal Justice Information to implement and enforce the act, with members of the commission drawn from state and local law enforcement agencies.

The proposed 13-member commission will have the authority to decide such controversial issues as the extent to which federal law enforcement agencies may use telecommunications and identification functions for interstate systems.

In addition, the commission may be expected to resolve the federal-state issue of whether states will be required to maintain dedicated computers for law enforcement records.

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Second-class postage paid at Boston, Mass., and additional mailing offices. Published weekly (except: a single combined issue for the last week in December and the first week in January) by Computerworld, Inc., 797 Washington St., Newton, Mass. 02160.

50 cents a copy; $12 a year in the U.S.; $20 a year for Canada and PUAS; all other foreign, $36 a year. Four weeks notice required for change of address.

Computerworld can be purchased on 35mm microfilm in half-volumes (six-month periods) through University Microfilm, Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich. 48106. Phone: (313) 761-4700.

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With 3606, 3608 Terminals

IBM 3600 Gets Credit-Checking Ability

By Ronald A. Frank
Of the CW Staff

WHITE PLAINS, N.Y. — IBM has added two credit card authorization terminals to its 3600 banking terminal system.

Called the 3606 and the 3608, the terminals include magnetic stripe readers and an eight-position gas panel display.

The terminals are designed to operate over private line facilities (with dial-up lines for backup) or hard-wired to a 3603 terminal attachment unit which also has been added to the 3600 system.

The 3603 can support up to 46 3606s or 35 3608s and transmits data to a 3601 controller at a central DP site which has an IBM 370 mainframe. The 3603 transmits at 1,200 bit/sec using Synchronous Data Link Control, IBM said.

Both terminals read credit cards with the American Banking Association Track 2 magnetic stripe used by major credit card plans. Each has 10 numeric and six function keys which can be programmed to handle specific transaction information.

The 3606 includes a magnetic stripe reader, keyboard and display, while the 3608 has these features plus a three-line printer that can handle typical multipart sales slips, charge receipts such as those used by bank credit plans and bank deposit/ withdrawal slips. An optional 10-character set can print the top line in OCR 7B font.

IBM 3606 Terminal

Although many types of credit cards can be read by the terminals, their dependence on the 3601 controller means all transactions must be processed through a central site which would normally be a local bank. The bank could then relay credit authorization requests to DP centers of national card plans, an IBM spokesman said.

The 3606 and 3608 can operate in the retail, supermarket or other environments where credit authorization transactions are required. The terminals are meant to operate in conjunction with point-of-sale systems, but they have no cash register capabilities and are designed primarily for credit authorization and the recording of basic transaction information.

The IBM 3606 and 3608 financial services terminals and attachment unit are available for purchase only. The 3606 costs $800, the 3608 is priced at $1,900 and the 3603 attachment unit costs $750.

The terminals and the attachment unit are covered by a three-month service and parts warranty. At the end of the warranty period, users may elect to have IBM maintain the devices for a monthly charge of $3.50 for the 3603, $5 for the 3606 and $9 for the 3608.

Service also is available on a time and material basis. Units requiring service or maintenance can be shipped to a designated IBM repair center.

First customer shipments are scheduled to begin during the second quarter of 1976.

Unveiling of 3344, 3350 Drives Marks IBM Move to Fixed Disks

(Continued from Page 1)

3330/3340 figures, but the data transfer rate for the 3350 is 1,198 kbyte/sec as opposed to the 800-plus transfer rates of the other drives.

Eight spindles of 3350s provide storage of up to 2.5G bytes.

Strings of 3350s, 3330s and 3340s may be intermixed on the same storage control unit, enabling users to configure a direct access storage subsystem with the combination of fixed and portable storage media best suited to their needs, according to IBM.

The 3350 A2 (first unit on string) is priced at $1,450/mo under the two-year Extended Term Plan (ETP), $1,704/mo under the Monthly Availability Charge (MAC) and $62,500 purchase.

The 3350 B2 (later unit on string) and 3344 are priced at $1,150/mo ETP, $1,351/mo MAC and $49,500 purchase.

Attachment to the CPU requires a number of options such as Expander Control Store, Control Store Extension, Register Expansion and word buffers of varying costs.

The units are designed to operate with 370/135s and up supported by OS/VS1 and 2 and VM/370 system control programming.

DOS/VS supports the 3344, but only the 3350 operating in 3330 Model 1 mode.

Model	3330-1	3330-11	3340	3344	3350
Price	$269,500	$353,410	$201,340	$277,810	$309,470
Capacity (Megabyte)	800	1,600	560	1,820	2,540
Cost/Megabyte	$336.88	$220.88	$359.54	$152.64	$121.84

This is a ballpark comparison of strings of eight spindles attached through an Integrated Storage Control (ISC) to a 370/145. The total price includes ISC, packs and other necessary black boxes to make it work, according to IBM.

On the Inside This Week

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- Additional sorting improvements on non-random data through BIAS parameter.

SyncSort III and III-and-a-half (introduced: 1974/1975)

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Says 'Window Dressing Not Enough'

Lightfoot Calls Token DP Hiring Hindrance to Women

By Catherine Arnst
Of the CW Staff

ATLANTA – Tokenism in DP hiring practices is "hindering women just as it has hindered all minorities," according to Judith Lightfoot, a senior technical representative at Management Science America, Inc.

Lightfoot, an officer of the National Organization for Women (NOW) who said she was a feminist before she was involved with computers, recently told attendees of an Association of Data Processing Organizations (Adapso) conference held in Mexico that the "overall picture of the industry is a disgrace" when it comes to sexual discrimination [CW, April 23].

"The computer industry is worse than some and better than others, but it's not as good as it likes to think it is," she said. She debunked as a fraud the notion that DP has avoided the discrimination found in other industries because it is relatively new.

In figures cited at the Adapso conference, she noted that 19.5% of professional computer specialists are women, but women constitute 91% of all keypunch operators.

"As status and money go down in our industry, the percentage of women working at the job goes up. People will always cite a few examples where a woman has made it, but in reality the overwhelming majority get nowhere," she said.

Although Lightfoot has never left a job because of discrimination in the decade she's been in DP, she has encountered it through the years and admitted she probably fared well because she tended to work for small companies where the opportunities are greater.

Sex discrimination was her reason for going into DP, however. "I was living in Australia with my husband and having a hard time finding anything other than clerical work, which I find very unsatisfying," she recalled.

"My husband was working for IBM, and the rumor got out that Lightfoot's wife was going back to America because she couldn't find a job, which meant he would leave too. Someone at a party suggested I apply at IBM, so I took the aptitude test and started out as a data control operator."

It is not difficult for women to get started in DP, Lightfoot said; it's just hard for them to advance from the keypunch operator or programmer level.

For the situation to change, Lightfoot thinks corporations should do more to implement affirmative action programs "as they are supposed to." She cited IBM as one company that has been a leader in affirmative action, but said "window dressing is not going to be enough.

"A couple of healthy lawsuits should help," she added, and said individual chapters of NOW have filed several such suits against DP companies.

Involvement so far has been lax, she said.

"Women aren't active in fighting discrimination because this is an industry where women themselves have believed the propaganda," she said.

60% of Women DPers Not Encountering Sex Bias

(Continued from Page 1)

having been so vocal, I've impaired my upward mobility."

But, she added, "if you didn't have the radical types, the moderates would seem radical. Without constant pressure in various forms, nothing would ever happen."

A DP supervisor, with three years experience in the field, has encountered no discrimination and believes DP has "excellent opportunities" for a woman.

"I've never felt there was ever any discrimination and I never had a need to pay much attention to it. I've been too busy doing other things," she said.

A senior computer programmer who has been in DP for three and one half years said she has been subjected to subtle discrimination – "You're always just a woman; even if you're sharper, they have their doubts. I bring it up, but when I do, they say I'm being too emotional. I'm acting 'just like a woman.' "

She feels that women can advance, but not into management – "maybe as an analyst, or a project leader," she said.

A former clerk who has been a keypunch operator since the first of the year said she went into DP because the company replaced its manual accounting system with a computer and, rather than hire a new employee, trained her. Although she has never encountered any discrimination, she attributed this to the company for which she works, where "everyone is really fair."

The feminist movement has definitely improved the situation in DP, she feels. "It's made people realize that women do have minds and can do more than just the paperwork associated with DP."

A systems data analyst involved in DP on and off since 1956 said it was very difficult to answer "yes" or "no" when queried about discrimination. "Men find it difficult to work with a woman no matter where you are, but this is a product of the double standard in our society."

She has noticed "a reluctance to send me to school because I wasn't necessarily the breadwinner." She is in the military, and said the armed services are much fairer than civilian life because assignments are made on the basis of rank.

However, she added, discrimination can come in the type of assignment or the room given.

DP is ideally suited for a woman, she said, "because the world of logic and the ability to think logically aren't exclusive to men. The requirements for DP are well within a woman's capabilities."

A woman who is president of a company owned by her husband was vehemently opposed to the woman's movement and said she feels any discrimination felt by women is "all in their heads. They create a problem by creating a situation," she said.

She has no formal training in DP, but claims "people have accepted me because they don't know anything about it either."

She's found most of the people with whom she works very fair: "I just smile real nice and they'll do anything for me, since I'm just a little bit of a thing."

In some ways the feminist movement has hurt women, she added, because "now men can do jobs that were formally women's, such as phone operators and secretaries. Women in the end are the losers."

An operations supervisor involved in DP for four and one half years said she encountered discrimination at one company where "I was working for a person who felt women just shouldn't be working.

"I talked to him about what I wanted to do and he told me that wasn't going to happen, so I left."

She is now working for a small company where she feels her opportunities are very good – "I could advance as fast as any man."

A woman who added she is also black claimed she has met no discrimination at the small insurance company where she is a corporate official.

DP is "pretty wide open for women," she said. "There is nothing limiting me except myself." Large companies, however, still have problems, she added.

A DP supervisor who is the only female executive in her company acknowledged slight discrimination in DP. "There is a tendency for men to feel they just know more, and they are more dominant. It's not that prominent, so I accept it."

Advancement depends on the company you're with, she said, adding that "being a woman has been a disadvantage for me."

A programmer who has been in DP since mid-December feels opportunities for women are "pretty good." It's a new field that's changing fast, and it's fair enough if you've got it together."

The situation has definitely improved, she added, because when she was applying for a job she was told that a few years back "I would have been asked what I'm doing in a man's field."

Congress Gets Bill to Control Criminal Justice Information

(Continued from Page 1)

The bills permit a state with laws stricter than the federal law to enforce their own provisions concerning transactions within that state.

Finally, the press and public will continue to have access to police blotters and court records, as has been the custom in the past.

The bills are said to incorporate "the best features of two bills introduced earlier this year" and represent a compromise between the Justice Department and the more liberal senators' point of view on the privacy of law enforcement records.

The bills are stronger than a former Justice Department bill in protecting the individual and, at the same time, are "less complex than the Ervin bill and more conducive to the preservation of efficient law enforcement," according to Sen. John V. Tunney (D-Calif.), who introduced the bill in the Senate.

Rep. Don Edwards, (D-Calif.) introduced the bill in the House.

Specifically, the bills limit collection and dissemination of criminal justice information, criminal justice investigative information and criminal justice intelligence information to authorized officers and employees of criminal justice agencies.

In general, employers in private industry will no longer be permitted access to conviction record information except where provided for in the act or by existing statute.

Raw arrest records may be made available only to other law enforcement agencies when such information might be of assistance in solving a specific crime.

In cases where such information is made available to noncriminal justice agencies, the data may be used only for the purpose for which it was made available and may not be copied or retained by the requesting agency beyond the time needed to accomplish that purpose, the bills state.

Whenever conviction records or arrest records are requested by noncriminal justice government agencies, the individual must be informed that such information was requested and told he has the right to review the information prior to its dissemination.

Theoretically, if the letter of the law is observed, arrest records will become a thing of the past and the only records in existence will be conviction records.

As for security, accuracy and updating of criminal justice information, each criminal justice agency will be required to adopt procedures "reasonably designed to ensure" physical security, prevent unauthorized disclosure of information and assure the information is updated regularly.

Such procedures also will be required to ensure individuals responsible for recording dispositions do so "as soon as feasible."

Under the bills, each criminal justice agency must seal or purge criminal justice information when required by state or federal statute, regulation or court order.

These agencies also must seal or purge records for all individuals who "have been free from the jurisdiction of any criminal justice agency for seven years" as long as the individual is not a fugitive.

Recalcitrance, Not Responsiveness, Marks U.S. vs. IBM

(Continued from Page 1)

The government, for its part, has entered documents and deposition testimony into evidence in a way that caused Edelstein to question how these exhibits are related and what weight they should be given at the trial's conclusion [CW, July 9].

Objections from IBM counsel to the bulk of the documents introduced and its counterdesignations in the depositions read into the record "to put the government's designations into context" complicated the court's receipt of this evidence as well.

The judge frequently lectured both parties on this subject in and out of court and at some length. He labeled many of his remarks redundant, somewhat pedantic and unnecessary, repeatedly suggesting that such sophisticated counsel should not need admonitions of this sort.

Frustrated by the inadequacies in the depositions of J. Presper Eckert and Robert E. McDonald of Sperry Rand Corp. as revealed in their testimony in court, Edelstein also found it necessary to take time out to write guidelines on taking depositions for both parties. He said he hoped factual matters that can be clarified during the deposition process will be handled in the deposition program this summer, rather than in court in the fall.

McDonald's testimony in court was notable for its confusion of basic facts. Toward the end of the cross-examination, for example, Edelstein asked lead IBM attorney Thomas D. Barr whether he had a clear understanding of the positions McDonald held with Sperry Rand and its Univac Division and the years that he held them. Barr replied he did not, and the court asked him how he could proceed with his examination of the witness without this basic information.

The witness himself provided little help, despite his assurances to the court that he wanted to be "responsive." While reasonably clear in his answers on direct questioning by lead government counsel Raymond M. Carlson, McDonald showed a great reluctance to answer Barr's questions under cross-examination.

Indicating he was extremely busy and had made no attempt to brush up on dates, events, people and places, McDonald couldn't recall how much Univac paid for the RCA computer base acquired in 1972 or how much revenue Univac had received from the RCA customer base.

"I was always very poor in history and still am," McDonald said.

The present seemed to cause memory problems for the Sperry executive, too. McDonald could not identify documents produced for IBM by Sperry counsel in response to subpoena just two weeks earlier. Similarly, he failed to remember subjects discussed at this three-day deposition, taken one year ago.

Visibly angry, Barr told the judge he did not mean "to reach an impasse with this witness," but he believed his questions were "well within" McDonald's knowledge. The IBM attorney said he intended to show Univac considered other vendors of computer services and equipment – in particular, leasing companies – competitors in addition to the mainframe manufacturers.

"I want to show that this competition existed, that Univac made changes in price on the basis of this competition and . . . ask your Honor to draw inferences from these facts," Barr said.

Analysis

McDonald is just one of a long string of industry witnesses scheduled to appear in the case. It will be a long and unprofitable trial indeed if each executive is so ardently unprepared.

And such a procedure could backfire. One observer remarked on her way out of court, "After watching McDonald on the stand and listening to the way his corporation is apparently run, I don't think Univac should have more than 10% of the market."

On the other hand, it will be interesting to see what tack Barr and the others of his team take in examining IBM officials.

Granted, this is the biggest antitrust case ever brought to court to date. Granted, the subject is difficult; the terminology is technical and, therefore, foreign. Granted, the adversary process takes time and never promised efficiency but, rather eventual justice. Granted, this case will not only make history, but holds the potential for changing the shape and style of American business as well.

Nonetheless, the case has come to trial and some decision will be reached. Hopefully, that decision will reflect the truth as uncovered, not clouded over, in court.

Linowes Elected Head Of U.S. Privacy Unit

WASHINGTON, D.C. – David Linowes, a partner in the New York accounting firm of Laventhol, Krekstein, Horwath and Horwath, was elected chairman of the Privacy Protection Study Commission at its second official meeting last week.

Commission members chose Linowes over Dr. Willis Ware, a member of the Rand Corp.'s corporate research staff, by a vote of 4-3.

Linowes, a certified public accountant and a management expert, has served as a consultant to such individuals as John Gardner while he was Secretary of Health, Education and Welfare (HEW) and also during his stint at Common Cause.

Ware, a computer scientist who has been involved for many years in public policy research, served as chariman of the HEW Secretary's Advisory Committee on Automated Personal Data Systems and helped draft the well-known report to the HEW Secretary on the subject.

Ware will serve as vice-chairman.

Michigan Joins NCIC/CCH

WASHINGTON, D.C. – The state of Michigan has begun entering and updating computerized criminal history records in the National Crime Information Center's Computerized Criminal History system (NCIC/CCH).

This brings to five the number of states that are entering criminal histories in the FBI's computerized data base, which has grown to 588,339 records, according to a recent NCIC newsletter.

Attorney General Delays OK Of FBI Message-Switching Plan

By Nancy French
Of the CW Staff

WASHINGTON, D.C. – In response to criticism from the Law Enforcement Assistance Administration (LEAA) and constitutional rights proponents in Congress, Attorney General Edward H. Levi has delayed approval of the Federal Bureau of Investigation's proposed message-switching system.

The decision will be made after members of Congress can thoroughly review and debate the plan and its alternatives – a process that may take several months, a Justice Department spokesman said.

Levi's decision came as a result of a recent Justice Department briefing attended by Sen. John. V. Tunney (D-Calif.) and Rep. Don Edwards (D-Calif.), during which a 40-minute "dog and pony show" was staged, according to a congressional staff member.

The briefing was based on color slides incorporating quotes from President Ford which implied the program had his support, despite the fact that Ford has yet to take an official position on the proposed system.

LEAA objections date back to early January, when Administrator Richard Velde fired off a 19-page position paper to then Deputy Attorney General John Silberman.

The system the FBI has proposed would permit it to take implementation of the National Crime Information Center's Computerized Criminal History System (NCIC/CCH) one step further by giving the FBI the capability of automatically switching requests for criminal records from the querying state to the state where the information resides.

The federally sponsored and funded service would place total control of the nation's law enforcement telecommunications in the hands of the FBI.

And, because it would be offered free to the states, critics say those budget-wary jurisdictions may look to the system as a means of supplanting the service provided by the National Law Enforcement Telecommunications System, for which they now must pay.

In addition to LEAA's objections, correspondence entered into the *Congressional Record* recently by Tunney, chairman of the Senate Judiciary Committee's Constitutional Rights Subcommittee, indicated congressmen as well as high-level administration officials opposed the system.

The LEAA position paper warned the proposed switching system could result in:

- A "Big Brother" system with which the FBI could monitor the activities of state and local law enforcement agencies.
- Reduced state input and control over security, confidentiality and use of state originated data.
- Increased use of nonupdated and hence inaccurate, centrally maintained "rap sheets."

"It is critical to recognize that decisions in these areas raise basic questions regarding Federal-state relations and the concept of federalism," the LEAA report said.

"Primary consideration should be given to public and congressional fear over actual or apparent concentrations of federal power arising out of expanding control over, or direct access to, identifiable information which would otherwise be maintained in multiple, independent state systems," the report said.

Further, in this connection, "it is significant to note that the importance of preserving state and local control over law enforcement responsibilities has been specifically recognized within the executive branch by Presidents Johnson, Nixon and Ford."

The FBI response to the LEAA report, described by critics as a tirade, criticized it for suggesting "security and privacy considerations are not of primary concern to the FBI in its development of the Computerized Criminal History program.

"The FBI has "long recognized the sensitivity of the Computerized Criminal History data and the sanctity of the privacy of the individual," it said.

Tunney Expresses Dismay

On the Senate floor, Tunney expressed his dismay over circulation of the planned message-switching system which, he said, "constituted tacit Justice Department approval of the plan itself" in apparent violation of a May 6, 1974 agreement between Sen. Sam Ervin (D-N.C.), previous chairman of the Constitutional Rights Subcommittee, and then-Attorney General William B. Saxbe.

Evidence to date indicates traffic on the present system is dominated by FBI headquarters and its field offices rather than by state and local agencies, Tunney said. Two of the original six participating states have dropped out of the system because it was not cost-effective, he pointed out.

Second, he asked that a study determine how long the FBI's "limited" message switching will remain limited, suggesting that perhaps the FBI is building its telecommunications "empire" at the expense of alternative communications.

Third, all existing NCIC computer programs should be audited to determine their purpose, costs, utilization and impact on state and local agencies.

Fourth, a detailed cost analysis of the present NCIC system, outlining those costs that benefit federal missions, should be developed, he suggested.

Fifth, an analysis should be made of the merits of the FBI proposal as well as the work on national law enforcement telecommunications networks being conducted for LEAA by the Jet Propulsion Laboratory at a cost of $800,000.

An analysis should also be made of the management models built into bills proposed in the House and Senate this year to provide for the security, accuracy and confidentiality of criminal justice information.

Sixth, Tunney called for an examination of federal as opposed to state management and operation of the NCIC system to determine the proper roles of federal and state governments in a computerized criminal justice telecommunications system.

Congressional Criticism

Don Edwards (D-Calif.), chairman of the House Subcommittee on Civil and Constitutional Rights, is among those who expressed dissatisfaction with the Justice Department's handling of the FBI switching system.

In a May 12 letter to Levi, Edwards said he was struck by the report's "cavalier assumption that the only obstacle . . . is developing a technologically feasible plan."

"It is interesting to note," Edwards said, "that when comments were offered by various components of the department over the past two years, they have indicated not only weak support for FBI control over limited message switching but, in some cases, outright opposition."

As to the FBI's authority to develop message switching in the first place, Robert G. Dixon, assistant attorney general in the Office of Legal Counsel, said, "it is arguable even in the absence of expressed statutory provision that there is legislative authority to support the FBI's position that is authorized to . . . implement the switching of administrative messages in connection with its exchange of criminal records."

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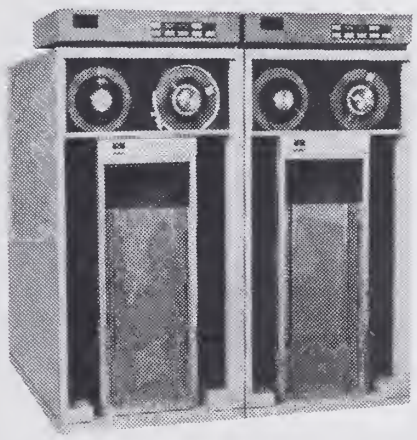

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But Game Playing Bridges Gap

'People Problems' Can Threaten Production Systems

The failures of many computerized production systems are people-related failures – they can be linked to ineffective communication between operating managers and data processing managers.

This article shows how one company used a computerized simulation game to overcome problems of this kind. A longer version of the article appeared earlier in Production and Inventory Management, *the journal of the American Production and Inventory Control Society.*

By K. Roscoe Davis
Special to Computerworld

With the rapid developments being made in the computer field, more and more attempts are being made to apply computer systems to the production department. Unfortunately, many of these efforts are falling far short of their objectives.

In the past we have customarily placed the blame on undeveloped computer hardware or software. However, a quick examination of the current technology will convince us the computer can no longer be the scapegoat. It's high time we recognize and admit that many production system failures are human-related.

Lack of management involvement or improper usage by users are often cited as human problems related to system failures, but one needs to look deeper than this. The root of the problem appears to be linked with the different groups that become involved in developing and implementing systems.

System design, implementation and maintenance are usually in the hands of specialized staff people: analysts, programmers, management scientists and project or group managers.

Production operations are generally in the hands of line managers: foremen and supervisors through middle management to department heads. To develop an inventory control, line balancing or any other production system requires effective communication between these two groups.

However, because of differences in education, training and experience, effective communication between systems and production people seldom occurs – and the result is often system failure.

My aim is to identify some of the factors in this communication gap. based on the results of a study conducted within the major production division of a large manufacturing firm. The goal of the study was to pinpoint and resolve the problems that led to the ineffectiveness of the firm's systems department.

Manufacturing operations within the production division were primarily continuous or assembly line-type production. Many of the typical problems associated with a continuous production process, such as excess or delinquent finished goods inventories, excess work-in-process inventories and less-than-optimal utilization of resources, were prevalent.

In an effort to resolve some of these problems, the computer systems department within the division developed several systems. These included an on-line status inquiry system and a production planning/scheduling system (information type systems); and a production control system and a resource allocation system (quantitative-type systems).

In examining the usage of the developed systems, it was found the heaviest use was made of the information systems; minimum use was made of the quantitative-type systems.

Reciprocal Finger Pointing

It was the opinion of the systems department personnel that the lack of use of some production systems resulted from the operating manager's failing to understand the systems. Operating managers, in a reciprocal manner, felt the systems failed to meet their objectives or were improperly designed. Each party thus blamed the other for the ineffectiveness of the systems.

A second set of interviews supported the hypothesis that a divergence of experience and training existed between the two groups. The systems people had systems experience and no production/operating exposure; the operating department managers had no formal systems experience or exposure.

We concluded that the poor communication between the two groups was caused by this divergence in training and experience. Collaboration between the groups was difficult – the staff people tried to impress the operating managers with their knowledge of the computer system field and the managers proceeded to indoctrinate the systems staff with production jargon.

In an attempt to resolve some of the communication problems and thus increase the use of systems, a decision was made by the systems department manager to develop a management game to demonstrate the quantitative concepts employed in an existing system. It was designed to parallel the logic employed in an existing production assembly line bal-

(Continued on Page 10)

Computers in Manufacturing

If future American economic growth were to depend on cheap raw materials alone, prospects would be grim.

Instead, ingenuity and technical skill will have to replace the natural resources that fueled this country's past economic climb.

While other costs have risen, the price of computing power has held steady or declined and its reliability has increased. It's not surprising, then, manufacturing firms have begun to notice DP can do more for them than print a weekly payroll.

As Robert T. Lund wrote [CW, Sept. 25] there are other forces pushing toward the involvement of computers in manufacturing, apart from their falling cost.

"Processes have become so complex and haphazard or operate at such great speed, humans can't process the information and act effectively," he said.

Additionally, "the high cost of capital in all parts of the world puts a premium on utilization of equipment and inventory investments," he said.

Computer-managed manufacturing can also help countries with labor shortages or take over "repetitive, monotonous, dirty or disagreeable work [that] has created localized labor shortages" in countries with labor surpluses.

Health and safety legislation is also pushing manufacturing technology toward "the industrial revolution of computer-managed manufacturing," he said.

While the use of computer-based management information systems within industrial firms may be less spectacular than the latest automation techniques, the same goal of increasing productivity lies behind them both.

Manufacturers Turn to DP For Production Control

By Roy W. Smolens
Special to Computerworld

Rising cost pressures, increasing product complexity and growth in the number of manufacturing application packages are widening the role of production control in manufacturing.

A consulting firm's study in 1968 and another in 1972 showed about 40% of computers installed by manufacturers were being used for traditional financial functions such as payroll, general accounting and accounts receivable. Manufacturing applications, including production and inventory control, accounted for only about 18% of computer use.

These same surveys, however, projected a dramatic shift to the use of computers for key manufacturing applications. An increase of about 35% was expected within three to five years.

And, despite the recession, significant increases in the use of manufacturing applications have occurred.

What's behind the trend? First, there is increasing competitive pressure in the entire marketplace.

Second, rising material, labor and fuel costs continue; it has been estimated shop costs for all manufactured goods are a monstrous 69% of selling prices. Reduction of such costs has become critical to remaining competitive.

The shift toward automation in American industry has also placed production control in a position which ties the business information flow to the physical production flow.

What this means is top management has access to more information about the production process. More probing and meaningful questions can be asked about those operations. Costs can be reduced and profits improved.

There are several areas where production and inventory control software systems can improve a firm's performance and profits.

A material control system, for example, translates sales forecasts and demands from the order processing function into material flow plans.

A good material control system approach to inventory management can provide timely, accurate and consistent information about material items status, product structures, reorder points, economic order quantity (EOQ) data, inventory valuation or costs, location of key inventory items and schedule data indicating when items should be ordered from the shop or purchased from outside.

A variety of key exception reports, forecasting techniques and decision rules can be adopted on the computer to allow zeroing in on better materials management and improved cost/performance.

Another area of savings is in more automated control of material item ordering. Frequently, this area is not given adequate attention. For example, purchasing a single machine tool worth $25,000 requires several levels of management approval. But how many levels of approval are required to purchase $25,000 worth of sheet metal or other raw material?

If ordering rules are computerized, manual intervention can be reduced to a minimum, and definite cost savings realized.

Whether an item is produced in the shop or outside, knowing its current status is essential to sound production control. Computerized inventory management systems should provide timely, accurate release and expedite reports for better shop control.

Manual systems just won't provide the accuracy of control a computerized system does with proper daily or even hourly feedback of operations status.

If an assembly is late and it's critical to completion of a customer order, exception reports tied to administrative or work centers can naturally help production control personnel improve shop performance.

Equally important, computerized inventory control systems can give production control timely inventory planning reports. These reports can show the status of active and planned supply orders, scheduled requirements, projected inventory levels and suggested reorder quantities.

Effectivity Changes

One of the biggest problems in production and inventory control is the timely handling of engineering changes, especially if the product is developing and personnel continuously changing.

In computerized production and inventory control systems, the ability to highlight the items or automatically handle effectivity changes can provide sizable inventory reductions and a more efficient shop system.

Proper forecasting of demand is another key element in optimizing inventory. Once again, the classification of material plays a key role.

Statistical forecasting techniques such as exponential smoothing will become the key to survival in many businesses, since there simply won't be enough skilled people who will have either the time or experienced judgment to predict demand for a growing variety of items. Misjudgments will be costly. Here, the computer can help by making better inventory management decisions.

One of the biggest payoffs from computers is in better utilization of plant resources through more efficient scheduling of people, equipment and work.

In increasing numbers, computers are being employed to schedule and keep track of the complex relationship of material availabilities, job routings, detailed work schedules, job completion status information and other data.

In so doing, they can improve cost competitiveness by utilizing people and resources more productively.

The application of the computer to the basic production control job should be viewed as an investment. Today, investments are made in automated machine tools to increase productivity in a specific area.

Application of the business computer can increase productivity, and, unlike a machine tool investment, it can do this in more than just one area of the shop.

Even more importantly, it can do it on a continuing basis as business expands.

During a period of economic decline, increasing productivity from existing facilities is a clear business goal. In many areas, it means the difference between profit and loss.

On the other hand, when viewed through a continuing period of inflation, better utilization of existing facilities via the help of the computer can mean less need to invest in costly new plants, people and equipment.

It can also mean less need to maintain higher levels of inventory dollars to satisfy expanding business output requirements.

Smolens is manager of manufacturing and distribution industry support at Honeywell's computer operations in Chicago.

Progress Report:

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Mini Lets Small Manufacturer Know 'Where It's At'

VAN NUYS, Calif. – In an era of material shortages, the small furniture manufacturer can succeed only to the degree he knows where "it" is at.

Computers At Work In Manufacturing

"It" represents raw goods needed for production, the freight space for shipping and the cost factors that can deeply cut into profitability if they get out of hand.

For Albright & Zimmerman (A&Z), a furnishings manufacturer here, a minicomputer with software written in-house has made a "fantastic" difference in the company's operations over the last three years, according to Glen Albright, a partner in the firm.

In that time, the production volume has doubled, but the firm has not had to add anyone to its administrative staff. Without the computer, the company would have needed at least three other people, Albright said.

"It's eased our workload so we have much more time to deal with customers," he added.

And with the reports on work flow, inventory levels, material usage, raw goods buying and personnel scheduling the system produces, "we know what's going on," he said.

For example, the firm runs a five-level bill of materials explosion program that helps it reevaluate the price of any product when the elements used in its manufacture goes up in price.

Wood is obtained from around the world for A&Z furnishings. Since supply of certain woods can take weeks or months to reach the company, inventory control is a vital function.

The Basic/Four system provides a continuous inventory status and alerts management when new furniture orders will deplete present supplies.

Albright, his office manager and a department foreman wrote this and the other application software on the mini system.

Before the minicomputer, the firm had used IBM 632 unit record gear. While it takes the minicomputer 10 minutes to prepare production tickets and shipping labels, it had previously been a two-hour job, Albright commented.

The manufacturer also uses the system for payroll preparation and accounting. The previous three hours devoted to these now takes 30 minutes.

"And we store information such as tax deductions that we were unable to do previously," Albright said.

Other examples of time savings includes quarterly taxes, prepared in one hour instead of four or five, and invoices, developed in 20 minutes instead of 90 minutes.

People Can Threaten Systems

(Continued from Page 8)

ancing system. At the time, minimal use was being made of the system.

The decision to employ the game was based on three assumptions:

1. In order to simulate the manufacturing operations, the system staff would be forced to reexamine and become more knowledgeable of the operating environment.

2. In exercising the game, operating managers would become knowledgeable of the balancing logic of the system and how it was designed to operate in conjunction with the production operations. The game would also give managers an opportunity to experiment with the system without submitting their operations directly to the system.

3. Development and use of the game would force collaboration between the two parties.

To make use of the game most flexible, it was programmed in an interactive mode on a time-sharing computer. Portable terminals, available for exercising the game, allowed the game to be conducted directly in the operating area or in any suitable remote location accessible by phone.

Using the game as the focal point, we conducted a gaming session with all eight of the operating managers. The session involved a short lecture on the theory of the production control technique used in the game, the objective of the game-play activity, actual game play and, finally, a critique of the game and the session.

Game Results

To measure the effect of the game activity on the use of the production system, the operations of four of the production areas were monitored.

Analysis showed the game sessions did boost use of the production control system. Significant productivity gains followed.

Several broad results, in addition to the increased use of the control system, occurred after the game session. First, a more relaxed, interactive atmosphere existed between the systems department and operating department personnel. Secondly, there was an increase of interest in the use of systems in general.

But the most significant result of the game session – beyond the increased use of the system – was the identification of two design faults in the existing system.

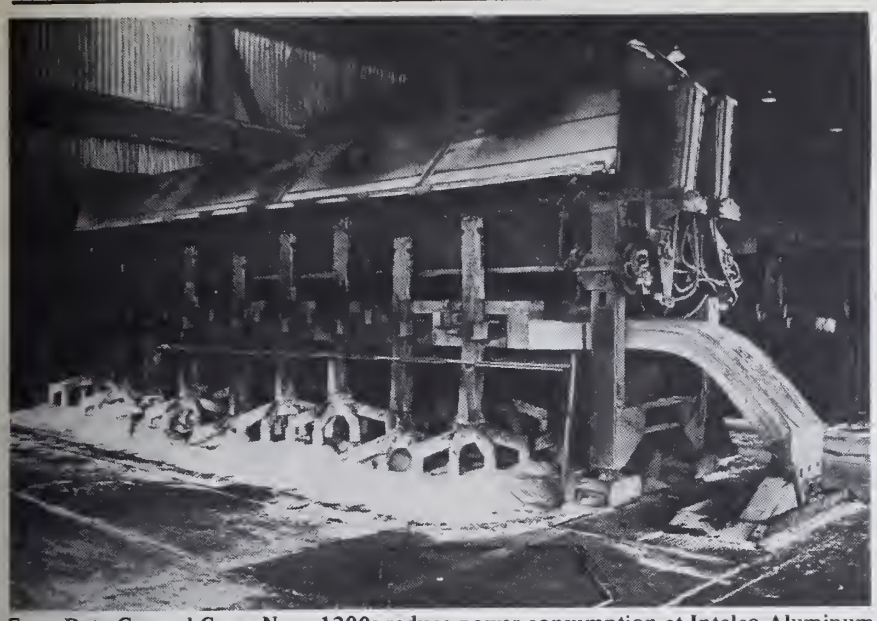
During the game session the manager repeatedly voiced the opinion that the game was too constrained. First, the game was structured with a preset desired work-in-process – a player was forced to reduce his work-in-process inventories to these levels. Secondly, the game logic was set for a single time period – a player was forced to "balance the line" in one work shift; multiple shifts were not allowed.

The game was redesigned so that a player could specify a desired work-in-process goal and use multiple periods for achieving the balance.

The logic changes made in the game were also made in the existing production system. A user thus could specify a desired work-in-process and balancing period.

The system then met the needs of the production manager; he was not put into a "straitjacket."

Davis is assistant professor of quantitative methods at the University of Georgia in Athens, Ga.



Four Data General Corp. Nova 1200s reduce power consumption at Intalco Aluminum by controlling the position of anodes in 240 aluminum reduction pots like the one above.

For Aluminum Plant

Minis Reduce Power Needs

FERNDALE, Wash. – An aluminum refinery here has cut down power consumption and increased productivity by using minicomputers to help control the refining process.

Each of the three aluminum reduction lines at Intalco Aluminum Corp.'s plant has 240 pots connected electrically in a series. A constant 130,000 ampere DC current is maintained through each line, which consumes approximately 125 megawatts.

The normal voltage drop across each pot is about 4 volts, or 960 volts per line. Variations in resistance along the line can cause increased power consumption.

Intalco once tried to keep pot resistance at ideal levels by manually checking and adjusting the pots. But "line foremen could only check and adjust pots one at a time, and pots often operated incorrectly for several minutes before voltage abnormalities were found. They simply could not give each pot constantly needed attention," according to Kenneth D. Williams, project engineer.

In 1969, Intalco began looking for an automated system to control its electrolytic refining process. There were several points to consider.

First, Intalco's reduction lines run day and night without interruption, and the firm therefore needed a product that would not break down and possibly cut plant production.

Computers At Work In Manufacturing

Secondly, each aluminum reduction pot also needed constant checking to keep energy consumption low. The company looked for a real-time process control system that could automatically monitor operations and let supervisors use their time more efficiently.

The company wanted its system to correct pot voltages. It also wanted the system to signal an alarm when voltage readings were too high for computer correction or leaking occurred.

The process control system also would have to be economical enough to use on all three lines.

After evaluating various alternatives, Intalco decided on a small computer network designed by Allis-Chalmers, Inc. The network includes four Data General Nova 1200 minis, several display terminals, real-time clocks, analog-to-digital converters and multiplexers.

Each of the three reduction lines now has its own minicomputer, eight fieldstations and two display terminals. The fieldstations consist of an analog input scanner and output multiplexer that handle 30 pots.

The minicomputers continuously monitor and control the aluminum reduction pots. Reduction begins when raw ore, called alumina, is manually poured into the pot and forms a liquid bath.

Carbon blocks, or anodes, that carry electrical currents through the bath cause the alumina to separate. Separated ore collects at the pot's base, or cathode, and is poured off as aluminum.

When the liquid bath is filled with alumina, the pot's electrical resistance is low. But resistance increases as the ore is used up. The minicomputer's job is to raise and lower anodes to maintain an optimum condition in each pot.

"When the anode-to-cathode distance needs adjusting, the Nova transmits a coded output word back to the fieldstation," Williams explained.

"Each pot has its own code word. The multiplexer carries the code word to the pot's jacking motor, instructing it to move up or down for a specified length of time.

"At the same time, the computer starts a half-second timer that checks correction procedures. It automatically resets the timer until the instruction is completed and the pot functions normally. The entire pot cycle takes only a few seconds."

"If the jacking motor does not respond or complete adjustments fast enough, or if leaking occurs, the Nova 1200 triggers an alarm at both the foreman's terminal and computer room terminal.

"The computer room alarm also broadcasts through the appropriate line. If a foreman is away from his station, this alarm signals him to check his terminal, which identifies the faulty pot," Williams said.

"At the end of every eight-hour shift, the computer automatically outputs pertinent shift information. These hard-copy reports identify poorly operating pots.

Editorials

A Time to Organize

The summer recess of the U.S. vs. IBM antitrust trial should be used by the government as a time to better organize its case as well as a time to complete the preparation of the new issues in the case.

The lawyers on both sides will certainly be busy with the more than 150 depositions that must be taken on the issues of peripheral equipment and leasing – the so-called "new issues" of the case.

But, at the same time, the government clearly owes it to the taxpayers to better prepare the rest of its case.

To date, the government's handling of the largest antitrust case of the last 50 years has left much to be desired.

Witnesses seem to be unprepared for their roles in the trial; the identification of exhibits and deposition testimony often seems confused; and the overall presentation on the part of the government is less than should be expected.

Luckily, the government now has a break in the trial, during which it should be able to "get it all together." Some of the attorneys on the government team should be set to the task of organizing the material to be presented when the case resumes in the fall.

The court deserves such organization; the defendant (IBM) deserves it; and, most of all, the general public deserves a clear-cut presentation of the evidence.

Marking the Price

Clearly, the consumer sentiment calling for the continuation of marking prices on supermarket items is not an "anticomputer" movement.

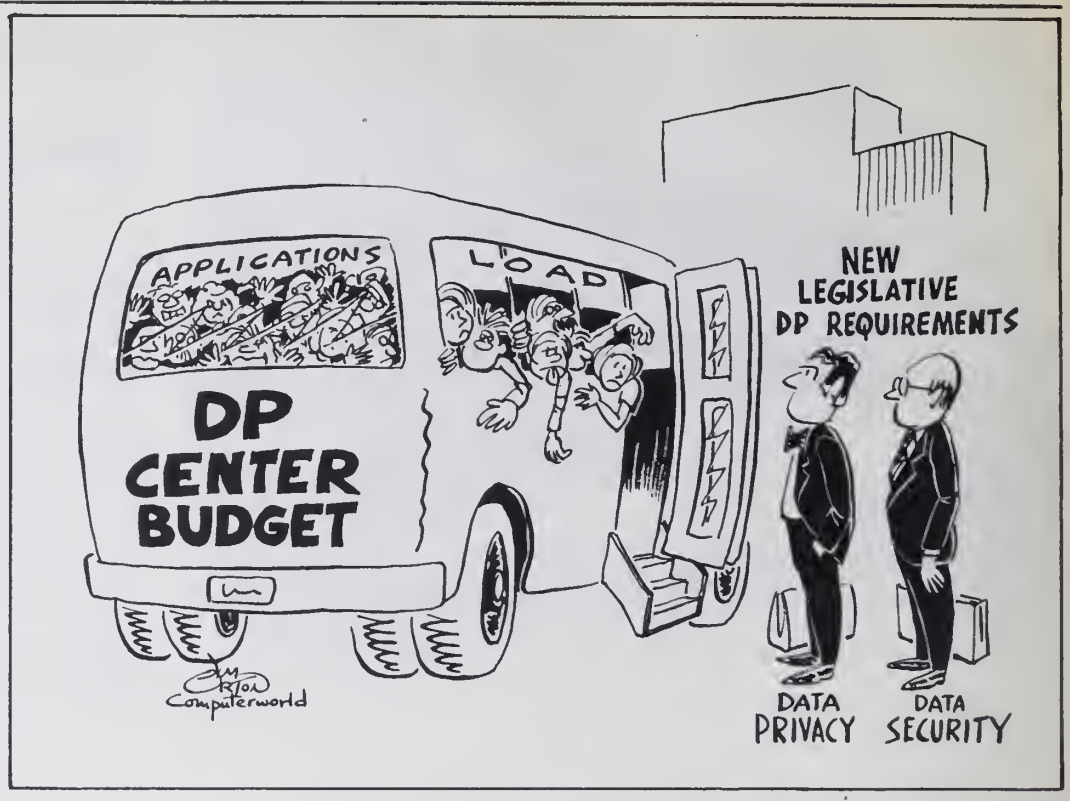
In recent letters to the Senate Commerce Committee, only 9% of the writers expressed an anticomputer feeling, even though 97% of the writers felt prices should be left on packages in automated supermarkets [CW, July 16].

This is a sign the general public is backing away from the "blame the computer" syndrome of a few years ago, when any computerized system created suspicion and distrust.

However, the situation could arise again if supermarket management continues to drop price markings whenever automated checkout equipment is installed.

Studies have shown the introduction of scanning equipment can be economical in supermarkets even if the prices as well as the bar codes for the optical readers are left on the packages.

Supermarkets should leave the prices on all items and continue to install the automated equipment. They will then be able to save money while pleasing consumers with quicker checkout.



'Crush to the Rear of the Bus, Please . . . '

Letters to the Editor

Catamore Decision Protects Those Who Volunteer for Exploitation

The court decision in the case of IBM vs. Catamore Enterprises [CW, July 9] appears to represent an undesirable extreme in the protection of helplessness – or more accurately, those who volunteer to be helpless.

By no means am I condoning the alleged actions – or lack of actions – by IBM or any other vendor. However, it is difficult to realize that in the 1970s there are still users and prospective users who allow the vendor to lead them down the "golden path."

Catamore by no means represented a unique situation. Many users – in increasing numbers, due to the new areas opened up by the System/3 and System/32 – with little or no true in-house expertise blatantly or subconsciously refuse to obtain outside objective guidance. Many listen only to the vendor or their external auditors, but few will obtain the services of a true DP expert.

Concurrently, the hardware vendors discourage firms from utilizing a consultant or other form of outside aid. It is almost as bad as being one's own doctor, accountant, lawyer or architect.

While not condoning the actions of vendors, I nonetheless can only laugh at the victims who volunteer for exploitation. In good times and bad, a little investment in money and time on the front end will save much money, time and headaches over the long haul.

The old cliche of only getting what you pay for applies completely across the board.

Richard A. Katzman

New Cumberland, Pa.

'Capers' Don't Enhance DP Image

It's good to know *Computerworld* sympathized strongly enough with the Cal Tech students who ripped off McDonald's to run an editorial terming the actions "harmless" and a "prank" [CW, June 25].

Ho, ho, those clever fellows make me wish I'd thought of it first.

The DP industry's image is actually enhanced by publicity like this. The average man or woman likes to feel those enterprising, adventurous rascals out there with the computers are one-upping and taking advantage of him.

Yet, some critics warn computer people are gaining a reputation for being arrogant and elitist. I can't see why.

I think the guys who cooked up the Equity Funding "caper" were pretty creative.

Imagine, if only they'd given the money to charity when they were exposed or had had more time to retire the bogus insurance policies, the stodgy old insurance industry would have had a much-needed laugh at itself.

Come to think of it, there are lots of "capers" one could defend. Industrial espionage, Watergate, the CIA, "phone phreaks" who steal services and order equipment for their own use – what' ll those funny, original geniuses think of next?

Better make it a regular editorial feature. America is losing its sense of humor or something.

Pete Akwai

Saugerties, N.Y.

McDonald's Prank 'Good Fun'

I have followed with interest the comments on the story "Students Best Burger Bonanza" [CW, June 4], and I really had to laugh.

I think the caper was really good fun. It gave us DPers a chance to look at ourselves and see there is still a bit of life in those coming into the field. I doubt the Cal Tech students' entries caused any damage to the McDonald's chain.

And, aren't we all guilty of the same thing to a degree? It is the rare programmer or analyst I've met who hasn't used some of his installation's time to generate a Snoopy, Mona Lisa or Playmate-type of picture.

I hope people in the field aren't getting so sterile and cost-performance-oriented they lose their sense of humor.

Richard J. Copits

Kettering, Ohio

Conclusions Not Based on Facts

In reply to David Tanner's letter in the July 9 *Computerworld*, I must say his handling of facts was cavalier and he drew some rather tenuous conclusions based on a faulty memory. In addition, I resent his gratuitous slur on my abilities.

The key to the problem is his statement, "As I remember the story . . ." Each of the facts that Tanner "remembered" was either incorrect or was taken from CW's follow-up editorial, rather than from the original story.

Tanner's conclusions about my antistudent prejudices were certainly invalid. I made no statements, either positive or negative, about students in general. I complained about one particular group of students and about one particular incident.

If I have exhibited any prejudices in this instance, those prejudices are directed more at instructors and editorial writers who encourage and approve escapades such as that involving the Cal Tech students.

When I was in college, I didn't have much time left to play pranks – I spent most of my time programming for various university departments.

I object strenuously to Tanner's inferences, which are unsupported. If either of us is reaching unfounded conclusions, I'm afraid it's Tanner.

L.F. Wygant

Chicago, Ill.

Schillings and Groschen

The International Federation of Information Processing (Ifip) does several things besides run the massive triennial computer conferences, of which the last was Stockholm 1974 and the next will be Toronto 1977. It sponsors technical committees – the standards kind of thing, or Algol "improvement" – and it runs a major activity called IAG: Ifip Administrative Data Processing Group. This has headquartered for some years in Amsterdam; it holds seminars, publishes a rather good but skimpy series of business data processing quarterly and occasional journals, and in general provides a rather uncommon international flavor to the data processing scene.

The eighth general congress of the IAG, preceded by a small specialized seminar on national informatics institutes, was held June 17-20 at a lovely suburban hotel in Vienna. I was asked to give a little talk at the welcoming banquet, and to attend the seminar (largely because the National Bureau of Standards [NBS] Institute for Computer Sciences and Technology is the closest U.S. equivalent to a national informatics outfit).

The hotel and the attendees were magnificent, Vienna was its usual wonderful self, my old friend Heinz Zemanek of the Vienna IBM laboratory was in great form – but oh! those prices. Like elsewhere in Western Europe, everything costs much more in the local currency than even a year ago. And the schilling costs 50% more in thin old U.S. dollars than it used to.

Even so, it takes 16 groschen to make an American penny: I'm really small change in Central Europe!

I think it would be fair to say that the seminar, in spite of the vigorous leadership of Ron McQuaker of the Manchester National Computing Centre (NCC), was not really very useful. The problem, which showed up early, was that every country of the dozen or so represented had a different kind of national institute. The British one, NCC, publishes a great deal of educational material; the Norwegians do research; the Danes operate a federal data processing facility; NBS worries about standards and performance improvement; Third World countries often do equipment selection for the whole economy through their national institutes.

But the opportunity to hear about the various shops was very much worthwhile for me personally, both as an Association for Computing Machinery officer and as *Computerworld*'s editorial director. Brought me up to date on several East-West shared activities, for instance.

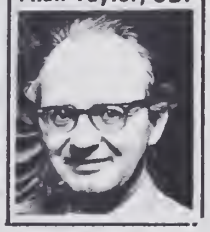
And I helped at the main congress by voting Dick Canning's proxy after he called back to California. I wasn't as informed as he, but on items like renaming the IAG and discussing headquarters management tasks, I had some small comments to offer.

Vienna and Grinzing are lovely in June. The huge wheel in the Prater is still turning. Computer politics on the world scene are still complicated. And prices, I repeat, are up!

Herb Grosch

Turnkey User-Vendor Relationship No Bed of Roses

The Taylor Report
By
Alan Taylor, CDP



Significant advances have been made in turnkey systems in the past five years.

Here, the advantages of specialist applications have been made available for tasks such as turning giant telescopes, monitoring distant galaxies, watching communication units and keeping up-to-date with the intricacies of payroll and income tax.

To hear many tell the story, the developing techniques of turnkey system suppliers will relieve us all from the tedium and uncertainties of system development, allowing us instead to relax, take over working systems and go on our merry way.

There are obvious advantages to such a way of operation. Developing a system after an installation has received its equipment leaves it open to overselling of both the equipment and the system itself.

Disappointment, delays and surprise inaccuracies can all result from this. A user can be locked in to improper equipment or software, can be forced to upgrade to spend more than he expected, etc.

None of these problems can occur – or so the argument goes – with turnkey operations. Here the user can try before he buys and so cannot be oversold. Here the user, not the vendor, is king.

Well, this makes a nice story. And, truth to tell, there have been no horror stories about any widespread failure of turnkey systems such as occurred in the nonturnkey markets of the 1960s.

There are no worries about disk crashes such as those that hit one major manufacturer's line or operating system performance fiascoes such as those that hit more than one manufacturer.

This silence, it seems, could be an indication turnkey systems are becoming the user's best friend and are living up to their billing. But do they?

For a number of reasons, I am dubious about the accuracy of this interpretation. Recently, I have found users of turnkey systems are having just as serious user-vendor problems as any other computer-procurement method.

Different problems, true, but serious ones nonetheless.

And through all these cases runs a common strand of user weakness in the face of unexpected system problems, which is exactly what the turnkey operation was supposed to solve.

However, whether my experience reflects any general result is not obvious because of the nature of the turnkey specialization. In the turnkey field, there are hundreds of vendors, not just a handful. There aren't major user groups with well-prepared publications and meetings.

So one user does not know what is happening in the rest of the field. News of failures or problems just does not get ground the way it ordinarily would in the nonturnkey world. So perhaps silence is not a good sign.

Still, it looked as though user-vendor problems would be less with turnkey operations than with general-purpose systems.

I started focusing upon the situation a few years after the installation of a turnkey computer-with-peripherals system. And then I heard about some of the problems loud and clear. And, with them, I discovered the continuing weakness of the computer user by comparison with the computer vendor.

Take such a turnkey system – for example, a computer with a widget mover – using an OEM disk interfaced by the supplier. Look at the situation in the first year of use and in the fourth year from the point of view of the user and of the supplier. Consider the fourth-year problem of getting spare parts for the now-obsolete equipment when they are needed.

Look at the fourth-year problem of finding software experts to search through documentation that was never checked out, for other than the developer's use, for problems which only become apparent when full capacity is needed.

Consider also the conflicting interests of the vendor and the user by the fourth year. The vendor has long ceased marketing the product and has gone on to provide other related but different items. The user, who has normally purchased his equipment, needs the availability of continued, economical support more than he ever needed it in the early days. Is this going to be available to him promptly, accurately and economically? It is a big question.

What worries me in reviewing these cases is these types of considerations are simply not being addressed in many of the turnkey systems.

Contracts are being written for "the software and hardware we saw in your headquarters" or for "the package called Blah with equipment." Documentation that gives only operational detail is being accepted by users. In general, little consideration is being given to the future.

Yet, while general-purpose computers are used by in-house programmers, there develops within the user installation a knowledge of system needs.

After a few years, this knowledge tends to release the user from overdependence upon the vendor. Turnkey systems, however, train their users in the use but not in the maintenance of their systems.

After five years, the turnkey users are as much reliant upon the vendor as they ever were. Indeed, because of the number of people who now are relying upon the turnkey, they are more reliant than ever.

So the turnkey user's position seems to be as weak as ever, although the impact of the weakness may be somewhat delayed.

However, as I said, not too much is really known about how these systems are working or how users are being protected. If you have had experience with turnkey operations, would you please fill in the questionnaire so others can have the benefit of your advice.

User-Vendor Relationships in Turnkey Systems

- Before Installation: Is the information the user gets accurate and adequate? YES___ NO___
  Details _____
- On Installation: Are the user-acceptance tests able to show the user whether the turnkey system is meeting all specifications? YES___ NO___
  Details _____
  Does the user retain and understand a set of tests which show the user whether the system is meeting all specifications? YES___ NO___
  Details _____
- After Installation: Are hardware and software problems courteously and economically serviced by the supplier during:
  Year 1 YES___ NO___ Year 3 YES___ NO___
  Year 2 YES___ NO___ Year 4 YES___ NO___
  Details _____
- Other Problem Areas: What other problem areas have you noticed in your experiences with turnkey systems? _____

Name _____
Position _____
Street Address _____
City/State _____

After completion please return to Alan Taylor, Taylor Reports, *Computerworld*, 797 Washington Street, Newton, Mass. 02160. Letters in replacement of questionnaire answers are most welcome.

Contract Disputes Can Lead to Court—Or Arbitration

From a Legal Viewpoint

By Roy N. Freed
Special to Computerworld

Even the best-negotiated and best-drafted agreements for computers or software programs require a means for resolving differences between the parties as performance proceeds. Careful drafting reduces the incidence of those differences substantially but, unfortunately, it cannot eliminate them entirely.

Speaking generally, there are various routes for dispute resolution. Under government contracts, the procuring agency reserves the right to resolve them. That sounds sort of high-handed.

In commercial transactions from which detailed specifications are absent, the supplier essentially reserves the right, in the first instance, to resolve disputes over what it is supposed to furnish. In dealing with some powerful suppliers, the user gets much of what he is entitled to by nagging and wangling, but essentially at the grace of the supplier and not as a matter of legal right.

Resort to the courts is always available in the commercial market unless there are provisions for arbitration. Litigation is expensive, burdensome and time-consuming – and frequently does not provide timely relief. A victory frequently can be Pyrrhic.

Arbitration has been touted over the years as a better way to resolve commercial differences. It is speedy, inexpensive and nonlegalistic. Those aspects can be great advantages to some parties and serious disadvantages to others. It depends upon your particular point of view.

Ordinarily, a supplier might want arbitration because arbitrators tend to take a reasonable, businessman's approach. Hence, its exposure would not be as great as at the hands of a judge or jury. An irate customer might want to resort to court, despite the delays, in order to take advantage of legal technicalities and especially discovery measures for getting at the evidence, in advance of trial, by means of depositions and subpoenas.

Some suppliers feel, however, that arbitration is too easy for customers and hence relieves them of the pressure to work things out directly. And some customers want reasonable resolutions of disputes, not an arsenal of legal weapons. You pay your money and you take your choice.

Essentially, then, the decision on which route to take – litigation or arbitration – is a matter of style in each individual transaction. Sorry to be so inconclusive, but that's the way it is. If you have questions or comments on the subject, we might treat the subject again.

Commercial Arbitration

For those of you who want to know more about commercial arbitration, let me tell about the role of the American Arbitration Association (AAA). It is an old and well-respected, nonprofit organization devoted to the speedier resolution of business disputes.

The AAA has offices in major cities, an established procedure for handling dispute resolutions and panels of arbitrators with various areas of expertise. It is not certain that the AAA has adequate panels for computer-related matters.

Where the parties agree to arbitrate, one simply files a demand with the AAA and the organization takes it from there. The parties can agree on arbitration either in advance or when a dispute arises, and it may cover all disputes or only particular types of differences. Arbitrators' decisions normally are enforceable by the courts.

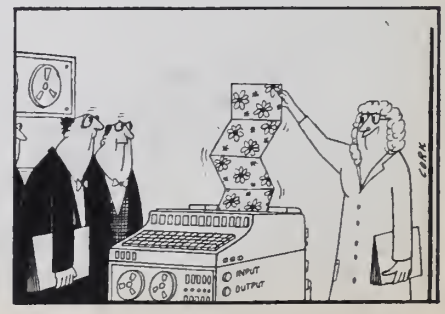
There is a particular area that seems to be developing in which both parties well might want to opt for a form of arbitration, namely in a complex, extended transaction to create a special application software program before truly complete design specifications have been agreed upon.

Increasingly, the parties in those situations are considering the selection of specific, single computer specialists to serve as permanent arbitrators for the duration of performance to rule whether particular efforts are within the scope of the work for the fixed price or constitute changes for which extra compensation is due.

This approach might be the only feasible way to get on with the project without interminable arguments. The precedent for it is the use of permanent arbitrators under collective labor agreements. Essentially, the arbitrator has to decide whether the work in question was contemplated to be included in the scope of work when the contract was signed.

What do you think of this approach? Can it be used widely to good advantage to suppliers and users? Should panels of eligible permanent arbitrators be assembled from which parties can make selections? Would the function be worth the expense?

I'd like to hear your views.



Married to System/3, But . . .

Data Center Makes Accommodations to Its Geography

By Don Leavitt
Of the CW Staff

HYANNIS, Mass. – A sign on the Mid-Cape Highway not far from here shows Boston is only 70 miles away. Edward Kelley Jr., a public accountant who runs Cape Cod Data Center, Inc. (CCDC) largely as a service to his accounting clients, has a different view of the geography.

"We're at the end of the earth," he said recently, describing, in one phrase, both the defensive attitude he feels toward vendors he doesn't know and the aggressive sense he has toward solving his own problems.

CCDC services both commercial and municipal customers from a 16K IBM System/3 Model 10 installed in the basement of Kelly's office. His commercial clients gain support for what appears on the surface to be fairly convenient DP applications – payroll, accounts receivable and the like.

Until the local community college got its own computer, CCDC handled its students and class scheduling chores. Now Kelly is deeply involved in running tax billings for at least four towns in the area.

He knows there are packages that might help his operation, but the cost of that help – and the impact it might have on his rapport with his clients – is always a consideration.

For now at least, he argues, IBM's RPG-II has been so well enhanced he and his associate, Joe Stacy, can write all the code they need.

And the locally written code fits in the small system they have, which some of the more generalized packages can't, Kelly noted with satisfaction.

The accountant seemed particularly pleased with the file maintenance program generator facilities built into RPG-II, but cited the Auto Report feature as "really good," too. By contrast, the lsam file creation routine can be "a little bit of a problem," he volunteered.

The System/3 wasn't the only CPU he considered when he decided to go in-house. The Burroughs B1700 was also studied, but it just didn't seem to have the capabilities Kelly wanted.

But the choice was made and Kelly is at least satisfied. "I think we're married here, and it's a happy marriage," he said. But like many marriages, this one includes some accommodations to make it work.

Kelly said he really would like to add a magnetic tape drive, especially to provide backup protection for his disk files, but that would add to the cost of the center.

Instead, he and Stacy "just stick around a little longer" whenever the files need to be copied and do the job without the tape drive.

The center uses 96-column cards, but not IBM's data recorder. Rather, Kelly opted for a Decision Data 9610 which, he said, has "10 times the punch of the IBM unit." Then he went further.

Vision to Reality

No engineer, he nonetheless conceived an interconnection between the 9610 and data lines coming in from his clients. With such a unit, users – including, for example, a retail store further out on the Cape – could send data electronically, but the center would still have "real" input that could be manually checked in case of any problems.

The unit he envisioned has been built for CCDC by Bedford Computer. Working from a standard RS-232B interface, it allows data coming in at 600 bit/sec to drive the Decision Data recorder directly.

Data coming in faster than 600 bit/sec can be stored on a magnetic tape cassette for later transfer to the data recorder. The cassette approach can also be used to receive data when the 9610 is being used by the operator, Kelly noted; clients, therefore, can send data when they are ready without waiting for the center.

Kelly has designed his applications to take good advantage of the data-driven punching capabilities of his interface unit. Each of the cards used for accounts receivable, for example, may carry multiple line items from one customer purchase, and payment records may also be "stacked" to cut down on card shuffling.

To work with the center's facilities most effectively and to overcome the delays of hand-delivering source documents, Kelly urges his clients to use Iomec Portaverters at their sites. These are relatively inexpensive and are similar enough to adding machines so the new user will be comfortable, he explained.

The only serious limitation these units have, as far as Kelly is concerned, is their lack of any alphabetic input capability. That information has to be entered through conventional use of the Decision Data 9610, he said.

'Measurement Tools Exist, Use Them'

By E. Drake Lundell Jr.
Of the CW Staff

ATLANTA – Whether you are from a large or small DP shop, "software performance measurement has a place in your environment," according to Donald Deese, director of the Directorate of Analysis at the Federal Computer Performance Evaluation and Simulation Center (Fedsim).

And there are many tools available, either free or for a small charge, to help analyze software Deese told attendees here at the Data Processing Management Association's recent conference.

When planning to study the performance of software, there are three areas to be considered, he said, including the applications software, operating systems and time-sharing software.

In the area of applications, he said, users should develop program maps to find out where those programs are spending the most time and which resources are most heavily used.

Then those programs can be looked at only in the areas that offer the greatest potential for saving, either in time or in system resources, he indicated.

Rework Makes Us Free

Often, by reworking applications programs, users can free significant amounts of computer resources, he added.

In the area of operating systems, he said, the placement of modules in the systems can seriously impact the operation of a system, indicating the manufacturers' recommendations were not always the best for every environment. In particular, he said, users should check their own systems for resident vs. transient modules because this is usually where there are problems."

If the modules you use 75% of the time are not resident in the system, then you're in trouble," he said.

In addition, users should make sure all of the paths to memory are clearly identified to the operating system so they can be effectively utilized. An extra channel doesn't help a system if it's not clearly identified, he said.

Communications Area

In the communications area, users should look at the amount of time needed and check the swapping activity within the system to identify the areas that may need improvement, he said.

Software monitors are the main source of information about how software is working in a system, he indicated.

Some of these are available free from the mainframe makers, he said, and some are programs that have been developed by other users and are also free.

But often, he said, installations have a wealth of information about their systems, but don't really realize what is available.

For example, he said, the accounting systems available with most systems can provide a variety of information on how applications are running and how the system is working.

He suggested users look at the top ten programs in terms of resource use first to see where they can be improved because they are the ones that have the highest potential for degrading the system.

In addition, there is a greater potential of savings with these programs, so they are definitely worth the effort.

'Daji' Runs JCL From Console

FT. WASHINGTON, Pa. – DOS and DOS/VS users have an opportunity to simplify and expedite the interface with Job Control Language (JCL) by utilizing the DOS Automatic Job-Control Interface (Daji) system now available from FS Development Corp.

Daji is not a procedure library, the vendor stressed, but a total system for storing, executing and documenting system job control. With Daji all JCL cards are loaded on a disk file and access to all programs and jobstreams is through the computer console.

By keying in a four- or five-digit number, the operator can select individual jobs, series of jobs or complete jobstreams. The assignment of numbers is made by the user and the five-digit jobstream numbers are usually supersets of the smaller job numbers, FS noted.

Since Daji can select jobstreams or programs in any of the five batch partitions allowed under DOS/VS, additional card readers or card input spoolers normally needed for multipartition support are eliminated, the vendor said.

The system is said to provide complete maintenance capabilities to add, change or delete JCL statements stored on the disk file. It provides listings of all job control parameters and jobstreams on command and is self-documenting.

Daji has to be integrated carefully with existing environments. Users of spooling systems should suspend or close reader spool queues before selecting JCL under Daji, and – under DOS/VS – Daji modules must be executed in real mode.

Daji will operate in any 14K or larger partition and is relocatable. The package is available now for $90/mo or $2,000. FS Development can be reached through P.O. Box 354, 19034.

Information-Gathering Packages Extend 'Auto-Draft' Capabilities

DENVER – Users of the Auto-Draft Interactive Graphics System from Auto-Trol Corp. can use their systems for information gathering – as well as graphics preparation – with three applications from the vendor.

A Text File package is the basic building block of the expanded capabilities, but a bill of materials system and job accounting routines are also available.

Any drafting application must have the ability to store part numbers, lengths, specification codes, labels and the like in the form of text associated with the graphic elements of a drawing. The Text File package allows such data to be defined as a drawing is being developed by Auto-Draft or prepared independently, stored in the system and merged with the drawing later, a spokesman said.

The bill of materials package is used in material take-off applications. Combined with the text package, it allows the user to extract, total and manipulate whatever information or attributes are required from a given drawing.

Job accounting allows the user to monitor and control costs accrued on a drawing or project basis. Specifically, it enables the user to record the amount of time each element of the system was used on a particular drawing.

The Auto-Draft system, a hardware-software turnkey system based on a Varian mini, is available for a cost ranging from $125,000 to just over $200,000.

For current users, the Text package is available for $2,100, the bill of materials for $6,500 and the job accounting for $1,000 from 5650 North Pecos St., 80221.

Mark III Gains IBM CPU

ROCKVILLE, Md. – General Electric's (GE) Mark III time-sharing service, built up over the years on the basis of GE (now Honeywell) 600 and 6000 series mainframes, has now been extended to include facilities based on an IBM 370/158 operating under IBM's OS/VS2 Release 1.6 with additional support from Hasp II, Version 4.

The Crisp III/70 service enables GE to process almost any existing in-house program which utilizes OS, with little if any reprogramming.

Access to the service can be from high- or low-speed terminals and jobs may be in Cobol, Fortran IV, PL/I or Assembler, a spokesman noted from 401 N. Washington St., 20014.

School Budgeting, Accounting Utilize HP 2000, EBA Routines

PALO ALTO, Calif. – Small to medium-sized schools or colleges with Hewlett-Packard (HP) 2000 series equipment can handle governmental funding chores with the Educational Budgeting and Accounting system (EBA/2000) just released by HP.

Part of the Terminal-Oriented Administrative Data Systems, EBA/2000 was designed to support accounting problems being run concurrently with instruction programs on a time-sharing system.

EBA/2000 operates on either a cash or a modified accrual accounting basis. The system includes encumbrance accounting, check preparation, general ledger and revenue and expenditure budget worksheets, a spokesman added.

HP's logic permits the user to work with flexible account code and reporting capability, allowing the institution to work with its own chart of accounts and special reporting needs.

The terminal orientation, however, provides simplified data entry and easy availability of accounting data, setting up an environment for more timely management decision making than has been possible, HP said.

EBA/2000 is available now for $8,000, which includes 10-days of on-site training. HP is at 1501 Page Mill Road, 94304.

NCR Adds Scheduling To Scholars System

DAYTON, Ohio – NCR Corp. recently extended the School Automated Records System (Scholars) to include modules for grade reporting and attendance.

Student scheduling was available previously, along with modules for control and data bank management, NCR said.

The grade-reporting module maintains and reports student achievement for a school year using 12 types of grading options. Numeric and alphabetic grades, with or without signs, as well as conduct and citizenship traits are handled by the system.

The attendance module maintains and reports attendance/tardiness statistics for the school year. Six types of attendance systems are available.

At the user's option, optically-scanned grade and attendance sheets can be used as input, an NCR spokesman noted.

Scholars operates on any NCR Century computer with 32K or larger memory. Neat/3 source code for all modules in the system – including two more, for test scoring and academic history, scheduled for release later this year – can be acquired for a monthly license fee of $80.

Infotab II Now Installed On National CSS Network

NORWALK, Conn. – Financial plans, budgets, business models and other "spreadsheet"-type analyses can be prepared directly by managers, accountants and other DP novices utilizing Version 2 of Infotab, now on the remote-computing network of National CSS.

Developed by Capex Corp., Phoenix, the Infotab update has an improved capability to read existing data files and supports more rows and columns than before.

Fortran or Cobol subroutines can also be used, the network noted from 300 Westport Ave., 06851.

With Cobol Report Writer

'Spotty' Availability A Problem . . .

By John R. Culleton Jr.
Special to Computerworld

William B. Simmons asked why Cobol programmers don't use the Report Writer feature [CW, June 18]. A good question. Here are some answers.

Commercial programmers write in a working subset of Cobol not out of choice but out of necessity. Cobol is the only widely available, reasonably efficient compiler language that will handle the full range of commercial applications.

However, coding and debugging a normal Cobol program is a very large pain in the posterior. Thus, programmers use shortcuts for commonly encountered applications such as report writing.

Where possible, they retain the working subset of Cobol as the ultimate compiler language, for reasons of machine independence among others.

The Report Writer feature is excluded both from the programmer's subset of Cobol and from the list of allowable shortcuts for two reasons. It isn't standard enough to be part of the Cobol subset and it isn't short enough to qualify as a worthwhile expedient.

First, availability of the Report Writer has been very spotty. Since 1968, I have compiled Cobol programs on seven different compilers implemented by five different vendors. Only one of these compilers had the Report Writer.

Such notable compilers as the old IBM DOS Cobol and Univac ANS Cobol for the 1108 lack the Report Writer. Although several current compilers now include the Report Writer feature, experienced programmers still hesitate to include it in their working subset of Cobol. They remember the feature was very nearly eliminated from the Cobol/74 standard.

Second, the Report Writer feature handles only one variety of report, the break-table format. There are other common formats such as the cross tabulation of frequencies with row and column percentages.

Easier Solutions

Third, within the break-table family of reports, there are quicker and easier solutions.

I have a handy, dandy little Cobol program (Totald) that will write a break-table report from any sorted card-image file using just a single parameter card to control field selection and level breaks. This is great for one-time reports.

For production break-table reports, I use Surge, a Cobol program which generates the source code for a Cobol report-writing program.

The report format is laid out on what amounts to a regular 132-column printer layout sheet and keypunched directly from the layout.

I can see the appearance of the final report as I am coding it.

The use of RPG and some of the commercial packages is less defensible since they do take you out of the Cobol environment entirely.

Nevertheless, speed of coding and debugging are powerful incentives.

Fourth, all of these solutions have one feature in common. The user describes the report rather than hand coding break-table logic.

All of them, including the Report Writer, require some of new statement forms and new concepts. However, the Report Writer is by far the clumsiest to code and to debug.

Culleton is an information systems analyst (group leader) with the Social Security Administration in Baltimore.

. . . But Use Pays Off

By Fred Sanson
Special to Computerworld

William B. Simmons' article on the Cobol Report Writer [CW, June 18] was long overdue.

Having had 10 years' experience with three different manufacturers' Cobol compilers, I finally tried the Report Writer feature late last year.

The impetus for my orientation was a complex report needed in a short time frame. It was to have multiple breaks and levels of totals; it was required on a regular basis for many years; and it needed to be easily modified by any programmer, quite probably at the trainee level.

Fortunately, I had learned by experience RPG or any similar report generator is a cement anchor on any project other than a simple report to be used absolutely one time only.

After detailed analysis, I concluded straight-line Cobol coding would have absorbed three to four weeks of penmanship. Therefore, the Cobol Report Writer loomed as a possible, needed alternative.

To scan the negative points Simmons cited:

Too much core? True, if a simple report is the object. As in any higher level language, standard subroutines are included when a feature is invoked. The Report Writer subroutines were rightly designed to handle complex requirements.

Nonstandard? Hogwash. An amateur's excuse. I have copped out in the past, when in too much of a hurry, copying an old example that worked. That doesn't mean it was standard, easily maintainable or efficient.

Supported and easy to learn? The sample program in the IBM ANS Cobol manual and one week were all I needed to get the report generated.

The sample program is probably a good cutting point between simple and complex reports. It has three levels of breaks and totals: daily detail, monthly and quarterly reports. Anything more complex should be under the Report Writer, anything less should be straight-line Cobol.

An analysis of a program-product benchmark showed, for a simple program, the Report Writer required 43 lines of code, straight Cobol required 21 lines and RPG six lines.

The Report Writer used 50K to Cobol's 18K of core on a 370/135 in real mode. A complex report took 74K and 186 lines under straight Cobol, 72K and 88 lines under the Report Writer.

In any case, it is obvious the Report Writer "overhead" is advantageous with proper usage.

The Report Writer's design features allow standard programming conventions. This is Cobol's main selling point on anybody's hardware.

Further, I can show an interested accountant in a few hours how to make changes to report format so I am not saddled with it forever.

Sanson is a technical representative with Cybertek Computer Products in Denver.

Six of the best reasons for buying Data General computer systems.

If a computer system can't do a good job of file handling, chances are it won't do your job well either.

So we give you a lot of good ways to handle your files.

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COMMUNICATIONS

Data Briefs

ICC Portable Test Set Checks Synchronous Modems

MIAMI – International Communications Corp. (ICC) has introduced the Model 711 test set, designed to provide dynamic testing and checkout of synchronous data modems and transmission facilities.

The portable unit offers a method of testing modems operating over two-wire switched dial-up networks; private line, point-to-point (two- or four-wire) networks; or private line, multidrop (polled) networks.

The Model 711 evaluates data transmission systems using synchronous modems operating at bit rates up to 9,600 bit/sec equipped for EIA RS-232 interface, supplying their own clock. It is a self-contained unit designed for use at computer centers and remote terminal sites.

The test set is equipped with both an audible and a visual monitor. It costs $350 from ICC at 8600 N.W. 41st St., 33166.

ITT Unit Begins Work on Net

NEW YORK – Work on the construction of a projected 1,500-mile microwave network has been started by United States Transmission Systems, Inc. a unit of International Telephone and Telegraph Corp. (ITT).

The firm plans to build an interstate common carrier system stretching from New York to Houston. A radio tower and building housing electronic, power and maintenance facilities will be erected near Philadelphia as a distribution point for communications traffic destined for the New York-Philadelphia-Baltimore-Washington area.

The New York-Washington link is scheduled for completion next April. The full, 1,800-channel system, including relay stations, backbone and spur terminals, is expected to be in operation by early 1977 and will provide private line circuits to business and government agencies within a 200-mile-wide corridor between New York and Houston.

The system is designed to provide a wide variety of private line communication services, including data.

DTC Reduces Terminal Price

CAMPBELL, Calif. – Data Terminals and Communications (DTC) has reduced prices for the Model DTC-300 data communications terminal, which utilizes the Diablo Hytype print mechanism driven by a microprocessor-based interface.

Originally selling for $4,300, the new price of $3,690 is effective immediately.

The firm is at 1190 Dell Ave., 95008.

'Otherwise Promising'

Auerbach Calls NCP 'Weak Link' of SNA

By Ronald A. Frank
Of the CW Staff

PENNSAUKEN, N.J. – A part of IBM's Systems Network Architecture (SNA) contains some inherent weaknesses, according to a research report issued by Auerbach Publishers, Inc.

In a report describing IBM's SNA and Synchronous Data Link Control (SDLC), the company said the Network Control Program/Virtual Storage (NCP/VS) "appears to be a weak link in the otherwise promising telecommunications support under SNA."

It based this conclusion on the fact that "NCP's job assignment is somewhat light and its activities are not free and clear of Vtam's intervention. It would seem much more apropos to provide NCP with a set of parameters and a program to monitor itself."

Although the Virtual Telecommunications Access Method (Vtam) is passed off as a simple procedure, the network definition required to create a Vtam telecommunications system actually means some effort for the user. The systems programmer must know what the network looks like from four viewpoints, the report said.

First, the programmer must know the physical configuration of the host mainframe system and its attached communications net. This includes types of communications lines and the manner in which they are used (private, dial-up, etc.).

Secondly, the user must know how the telecommunications system is seen by the host operating system. This includes the use of disk-resident systems used for communications such as Vtam and NCP.

Third, he must understand how Vtam interacts with the network and, lastly, he must understand how the applications programs relate to the telecommunications system.

"The amount of power invested in the systems programmer to do good or evil in the Vtam definition procedure is extraordinary. As the frontiers of communications are pushed out, creating a network definition using Vtam may become an impossible task," the report suggested.

SDLC Concerned With Handshakes

Describing SDLC, the report said the protocol is concerned with terminal-to-processor handshakes or in establishing a communications link. SDLC does not care about the information to be transmitted.

After it has laid the groundwork to start a transmission, the protocol is not concerned with the structure of the data, the length of the record or whether the record has a fixed or variable format. It does require adherence to a proper sequence of events, the report said.

SDLC becomes active after a message has been transmitted, but only to verify that the information sent agrees with the information received on the other end. It is SDLC's ability to clock in and out during a data transmission that allows it to be transparent to the information code structure, the report explained.

The protocol currently has three modes to facilitate terminal-to-processor handshakes. Two of these are for supervisory activities and one is for information transfer. Of the 13 commands used, nine are for data link management, three for transmission and one for information transfer.

Basic development of SNA began about five to seven years ago and this age accounts for the fact that the architecture really "can't handle some of the newer communications capabilities, such as computer networking and satellite transmission," the report said. The handling of networking was described as "extremely primitive" and satellite transmission was marginally considered, the report suggested.

Despite these faults, SNA offers the IBM user a universal adaptability to all of the basic telecommunications applications under a single set of packages and procedures. It will probably be expanded and improved, the report indicated.

Copies of the report are available for $25 from Auerbach at 6560 North Park Drive, 08109.

Legal Research Network Installs Custom CRTs in Clients' Offices

DAYTON, Ohio – Subscribers to Lexis, a computer-assisted legal research service which provides complete texts of court decisions and statutes of five states and many decisions and laws of the Federal Government, are using custom CRT terminals.

The legal communications network uses Bell data sets at law offices or accounting firms and at the computer in Dayton. The transmission is completed in a matter of seconds, many times faster than research is normally completed by law assistants poring through lengthy texts.

Developed initially for the Ohio Bar Association in 1969 by Mead Data Central, Inc., Lexis currently provides "libraries," or data bases, to subscribers in Ohio, New York, Missouri, Illinois and Texas and several cities elsewhere.

Lexis libraries include federal tax and securities law, as well as federal and state statutes and court decisions.

The terminal works through a dial-up phone line using Bell data sets that transmit at 1,200 bit/sec.

The terminal is supplied and maintained by Lexis as part of its service to legal users. It is a custom configuration that includes a Digilog CRT and keyboard with either a 30 char./sec printer from Texas Instruments or a 112 char./sec printer from Scope.

The Lexis data base is housed here on an IBM 370/155 which has a 3705 front end operating under in-house developed "intelligent teleprocessing software."

Starts With Local Call

A New York City lawyer requiring research material, for example, dials a local telephone number on the data set and is connected with the Lexis facility in the Pan Am Building in Manhattan. At this "hub," or New York communications center, the call is multiplexed through a Timeplex multiplexer and a Bell Dataphone 9600 data set for transmission to Dayton. These transmissions, on four separate private lines, each equipped with Dataphone 9600 data sets, travel at the speed of 9,600 bit/sec.

The process of the hub, while seemingly complex, takes place in a matter of milliseconds. The Timeplex multiplexer strips the start/stop bits from the 1,200 bit/sec stream and thus accomplishes the task of combining up to nine conversations with the 370/155 on one line.

In Dayton, four high-speed data circuits terminate in four Dataphone 9600 sets working with another multiplexer to translate the analog language back to the computer's digital form and to lower the speed back to 1,200 bit/sec.

Search Request

Once connected to the computer, the lawyer makes a search request of words and phrases likely to appear in statutes or cases related to his problem. The 155 scans the libraries selected by the lawyer to find cases or laws containing his search words or phrases.

The CPU finishes the search and reports to the lawyer the number of laws or cases it finds. The lawyer can then see how his search words have been used in context or the full text of retrieved results.

"Response time is incredible," Jerome S. Rubin, a member of the New York bar and president of Mead Data Central, said. "Ninety percent of all search requests are answered in 15 seconds or less."

Burroughs TC 5100 Line Features 60 Char./Sec Printer

DETROIT – Burroughs Corp. has added a family of intelligent terminal computer systems, the TC 5100 series. The four models in the series feature a 1 MHz processor and a 60 char./sec matrix printer.

They were designed for interactive data communications networks as well as for batch data collection and local site processing, the firm said.

The terminals, which complement the current TC series employ a microprogrammed processor which optimizes the amount of memory available for user programs; an overlap feature which allows the processor, during the execution of a microinstruction, to "look ahead" to the next microinstruction to be executed; a hardware interrupt system; and system confidence test routines.

Terminal computer application program products provided by Burroughs and written in Cobol and programs written in Cobol by users can be used without modification on comparably configured TC 5100 systems, Burroughs said.

The terminals use the recently announced Burroughs Data Link Control (BDLC) as well as Burroughs' other data communications procedures, all of which enable different types of terminals to share the same communications line and allow for expansion of networks to handle increasing volumes and new applications.

Terminal Transactions

In a network, TC 5100s can communicate with each other, with other TC series terminal computers, with Burroughs TD series input and display systems, with TT and TU series teller terminals, with RT series remote teller terminals, with TCS 1000 and B 770 series system and communications processors and with all of Burroughs' data communications-oriented computers. The TC 5100s can also communicate with other computer systems.

A basic feature of the TC 5100 is the system confidence test routines, stored programs which can be activated by the operator. They perform tests on the entire system including peripheral equipment, with results printed on a journal in English-language statements.

The four models in the TC 5100 line are the TC 5110, TC 5113, TC 5114 and TC 5115.

The basic configuration of the four models includes 4K bytes of user memory and either a minidisk or one magnetic tape cassette for loading of the interpreter, application programs and data. All four models can be expanded to include up to 16K bytes of user memory.

Burroughs TC 5115

The TC 5110 can be expanded to include a second cassette station and a panel display. The TC 5113 is equipped with two cassette stations and a display.

The TC 5114 has one minidisk and can be expanded to include a second minidisk and display. The TC 5115 is equipped with two industry-compatible minidisks and a display unit.

Both the TC 5114 and TC 5115 can accommodate two data communications lines.

Shipments of the TC 5110 and TC 5113 are currently being made to Burroughs offices and customer deliveries will follow immediately. The TC 5114 and TC 5115 are scheduled for delivery in the third quarter of 1976.

A 5110 with 4K of storage, one cassette drive, an asynchronous processor and data set cables costs $13,900 or $430/mo on a one-year lease. A 5113 with 8K of storage, 256-character panel display, dual cassette drives, asynchronous processor and data set cables costs $17,800 or $558/mo on a one-year lease.

Purchase prices range from $13,900 to $25,000, depending upon the amount of memory, peripherals, data communications procedures and interfaces.

Gen-Com 'Q Terminal' Runs at 30 Char./Sec

LOS ANGELES – Gen-Com Systems, Inc. has introduced the Model 300-Q or "Q terminal."

Based on the Qume printer mechanism, the 300-Q is a 30 char./sec, wide-carriage impact terminal. It has both interchangeable type fonts and snap-in/snap-out ribbon cartridges. Ten- or 12-pitch printing is switch-selectable.

The 300-Q is available in a 600 bit/sec configuration, and earlier terminals in the field operating at 300 bit/sec can be upgraded by exchanging printer mechanisms.

Designed around a microprocessor controller, the 300-Q has both horizontal and vertical tabbing as well as superscripting, subscripting and half-line feed controls.

Proportional text mode allows variable spacing between characters down to 1/120 of an inch. Multidirectional printing is standard.

Ascii and IBM 2741 communication codes are both standard in the 300-Q.

For customers with special requirements, the Q terminal's microprocessor can be directly programmed by the user or factory.

Over 4K of additional memory is available to develop control and communication routines or data entry preprocessing programs, the firm said.

A standard typewriter-paired APL keyboard version of the 300-Q is available. The complete keyboard, including the numeric pad, is reprogrammable, the company said.

Priced at $4,500 or $175/mo on lease, the 300-Q is available for delivery in two weeks to 30 days, Gen-Com said from 2306 Cotner Ave., 90024.

DPMA Panalists Agree:

Advance Planning Avoids Multivendor Finger Pointing

By Edward J. Bride
Of the CW Staff

ATLANTA – There are apparently no new solutions to the problems of multivendor installations. The idea is to avoid these problems in the first place through advance planning, several members of a panel at the recent Data Processing Management Association (DPMA) conference said.

The planning begins with the very first stage of evaluating plug-compatible equipment for "reliability, durability and expandability," as well as for compatibility itself, noted Lamar Lacy, shift supervisor at Southern Services, Inc., a holding company for several utilities in Georgia and the contiguous states.

Lacy also said it is important that, if problems do arise, one individual in the using organization have the authority to tell the vendors to "solve the problem or you'll both be out the door."

Multivendor Lever

Having additional vendors in an installation does give the user a "lever" in dealing with representatives of various manufacturers, he added.

An "everybody participate" philosophy avoids the "finger-pointing" syndrome, agreed Dr. Lou Penn, associate director of computer services at the University of Georgia's Office of Computing Activities.

The user sees problems occurring "in the system," and not in any individual component, Penn said.

Therefore, vendors must cooperate in finding and solving the problems, he said.

This syndrome, however, in itself has been exaggerated, according to L. David Williamson, session chairman.

There is a better price/performance ratio for the equipment in a multiple-vendor installation, said Williamson, assistant vice-president for data processing at the Life Insurance Co. of Georgia.

Smaller vendors may require less red tape when ordering or fixing equipment, and they may be more flexible in dealing with their customers in terms of customizing equipment or altering some clauses in their contracts, he said.

In phasing in new vendors, the university held informal weekly briefings with the vendors, letting them know of personnel and equipment problems that might have been overlooked.

These briefings are no longer required, Penn added, since the equipment is proven, and the personnel know how to keep it running.

Sometimes apparent system problems are simply overloads, and the first step in correcting a situation is identifying whether an equipment malfunction is actually present, Lacy cautioned.

If there is a malfunction, identifying whose equipment is at fault is the next step. Since calling in the wrong vendor can result in increased expenditures, this is an important process, he added.

Nonetheless, Lacy said the advantages of plug-compatible equipment more than outweigh the disadvantages.

Among the planning considerations in adding vendors are increased space both for offices for any on-site vendor personnel and for parts storage, noted Lacy.

The fact a user decides to split his inventory of DP hardware among several vendors could result in ineligibility for full-time or on-site vendor repair personnel, he added.

This may create an additional problem if the system is running crucial applications where fast response is important," he said.

System Selection Deserves More Effort

By Toni Wiseman
Of the CW Staff

ATLANTA – More effort is needed in the analysis and design phase of computer system selection, Data Processing Management Association (DPMA) Info/Expo '75 attendees were told at a recent workshop here.

DP managers today don't spend enough money, manpower or effort on deciding what they want and need and on writing specifications, "whereas we spend a hell of a lot on acquisition," said Edward O. Joslin, head of the Techniques Development Division of the Automated Data Processing Equipment Selection Office of the U.S. Navy.

Generally, management should appoint good people to the selection team, support them and be available to consult with them, he said.

In the analysis and design phase, management should encourage its people not to pioneer, since most jobs are already being done by someone else in at least a basic form, Joslin said.

Know Life Span

Management should demand to know the system's life expectancy, he said, because study teams have a tendency to look at the short term only, instead of five to eight years down the road.

Management should also require design alternatives so the group does not become "enamoured with one product and design the entire system around it," Joslin cautioned.

Meaningful economic justifications are essential, he noted, since a system must pay for itself. In addition, management must assure the availability of procurement funds to back up the selection process.

Finally, validation is a key aspect of system selection, according to Joslin.

This step should include a benchmark mix demonstration "consisting of a user-witnessed running of a group of representative programs on a vendor's proposed computer system."

The benchmark should validate the vendor's claims for the hardware and software's performance in processing the workload in the order and language in which the user is likely to do it, Joslin said.

Benchmark software programs should be "sanitized" to assure runability, repeatability, data availability and validity, he noted.

In the final step before system selection is completed, the team and management must make a cost evaluation.

"Requirements costing considers all the costs of all requirements," Joslin said, "but differentiates between those items (mandatories) which can be furnished only by a prime vendor and other system requirements (desirables) which could be obtained from other sources."

Xerox Doubles 560 Main Memory, Disk Capacity

EL SEGUNDO, Calif. – Xerox Corp. has doubled the maximum main memory on its midsize 560 mainframe from 256K words to 512K words.

The firm also announced the Model 3283 disk storage unit, which doubles the 560's maximum disk storage to 14 billion bytes.

Additionally, Xerox said it will offer a lower cost printer, tape drive and disk drive with the 560, reducing the price of a minimum 560 configuration by about 12%.

Xerox said it achieved the increase in the 560's maximum main memory by doubling the density of the system's magnetic core.

Each 3283 removable disk storage unit, capable of storing 188M bytes, has an 806 kbyte/sec transfer rate and an average access time of 38.3 msec, the firm said.

Each Xerox 560 can handle up to 75 of the disk units, giving the 560 up to 14M-byte disk storage.

The disk provides 100% more capacity at 40% more cost than the firm's 3277 disk, which will remain in the Xerox product line, a spokesman said.

The increases in 560 main memory and disk storage capacity will be available in the fourth quarter of the year.

The three lower priced peripherals for the 560 are immediately available. These include a 300 line/min printer, a 45 in./sec dual density tape drive and a single-spindle 49M-byte disk drive.

With the lower priced peripherals, an entry-level version of the 560 configuration now costs $378,175, instead of $425,796. Lease costs are now $9,969/mo on a one-year lease or $8,760/mo on a six-year lease, down from $11,239/mo and $9,940/mo respectively.

Xerox's Data Systems Division is at 701 S. Aviation Blvd., 90245.

Telefile Offers Xerox 7902 Equivalent

IRVINE, Calif. – Telefile Computer Products, which says it plans a new product introduction each month for Xerox computer users, has introduced a functional equivalent of the Xerox 7902 device subcontroller.

Telefile's Model T-7902 performs the control functions required to interface a peripheral controller and the Xerox system's multiplexer I/O processor.

The Xerox user who wants to use independent peripherals such as those made by Telefile can now purchase the necessary subcontroller from Telefile at a "somewhat lower" price than the Xerox version, a Telefile spokesman said.

The T-7902 costs $2,226 from the firm at 17131 Daimler St., 92705.

Photographed at the Sahara Casino, Las Vegas, Nevada.

Would odds 8,000 to 1 in your favor interest you?

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Finds Key-to-Tape Less Efficient

National Real Estate Firm Puts Its Money on Key-to-Disk

By Patrick Ward
Of the CW Staff

KANSAS CITY, Mo. – Increased flexibility is the greatest advantage of key-to-disk over key-to-tape, according to a user who has tried both.

When United Farm Agency, a nationwide real estate firm, switched from key-to-tape to key-to-disk stations, the firm achieved a 30% production increase and cut errors by 90%, according to Jo McRae, manager of the firm's customer service organization.

Keying speeds aren't faster on key-to-disk, she noted, but productivity jumped because the firm's Entrex 280 key-to-disk system allows data entry on several jobs concurrently. The United Farm staff could work on only one job at a time on its previous Singer Friden key-to-tape equipment.

Batch edit runs on the key-to-disk system are responsible for the sharp drop in errors reaching the shop's IBM 360/22 CPU.

Previously, computer room turnaround time could be up to four days, and 10 to 12 pages of exceptions would come back to the data entry section for correction. Now there is only about one page of errors coming back, McRae said.

Although United Farm liked its key-to-tape equipment, it looked around for other alternatives when the contract on the equipment was drawing to a close, McRae said. The key-to-disk system cost about the same and offered more capabilities, she added.

As a nationwide real estate firm, United Farm correlates individual customers' requirements with properties offered for sale throughout the country.

The firm employs over 500 agents in 40 states and mails out about one million catalogs a year.

Although each real estate catalog has a response card for prospective buyers to fill out and mail, customer inquiries also come back to United Farm in several other ways. Some customers write letters in response to advertising or to detail particular needs. Still others visit United Farm in person, and the firm has to complete forms for each customer inquiry.

All customer inquiries are sorted by territory, coded and keyed. Each agent then receives updated listings of prospects in his area with detailed descriptions of their real estate needs.

Information on property for sale comes to United Farm from its agents. This real estate data, like the customer inquiries, is numerically coded to indicate type of property, location size, price, size and type of buildings on the property, if any, and other special features (creek running through the property, timberland, etc.).

Then – in a matching process that resembles a dating service – United Farm's customer list is compared with its real estate master file. United Farm sends the customer a computer letter telling him which properties might interest him and what agents to contact.

In the past, United Farm's data entry staff had to work overtime to handle the sharp pickup in letters after the thrice-yearly catalog mailings, McRae recalled. The key-to-disk system's productivity gain has allowed the shop to eliminate this overtime.

Sentry Scanner Reads 7,000 Form/Hour

MINNEAPOLIS – The Sentry 7020 optical mark reader from National Computer Systems (NCS) can read 7,000 answer sheets or response documents per hour – the equivalent of 42,000 punch cards, the firm said.

The scanner reads both sides of a document in a single pass. However, a mark on one side of the page cannot be in the same position as another mark on the other side of the page.

A complete Sentry 7020 system includes a 16-bit scanner controller with an 8K-word memory; teletypewriter for interacting with the system; cassette drive unit for programming; output tape unit; transport for moving documents past the reading head; stacker that separates response sheets; and optional line printer that codes or scores each sheet.

The Sentry 7020 leases at $2,500/mo, including maintenance, on a five-year lease. NCS is at 4401 W. 76th St., 55435.

The Hewlett-Packard 3000 is a minicomputer?

"The 3000 a minicomputer? I think calling the 3000 a mini is an abomination!"

When we asked Mr. Thomas Harbron, Director of the Computing Center, Anderson College, Anderson, Indiana, what he thought about the HP 3000, he had some very interesting things to say:

"We're using the 3000 for administrative processing, academic work and some commercial work. We have 27 terminals and we selected the 3000 because we wanted a system that would provide us with remote access and would do general purpose types of things from the terminals. The 3000 allows us to do many different things at different terminals. In fact, it does everything we expected it to do and was the only machine we could find in its price class that would. I'd recommend the 3000 to others. It's a powerful and versatile machine. And it's cost effective as well. It's half the price of anything that comes close to it."

"I don't think that Hewlett-Packard ought to call the 3000 a minicomputer. It is a complete medium-sized system."

That's what the EDP center manager of an aircraft manufacturer said about the 3000. He also had this to say:

"One primary reason we bought the 3000 was to collect and analyze radar development data. The problem is that we have to collect data fast enough, pipe it to a computer, analyze it, and then make the necessary instrument adjustments. HP's 3000CX was the answer. We also bought it for its interactive capability. Very significantly, in our acoustics department we had to have the ability to turn around data analysis fast. The 3000 has been a real cost saving computer for us. For the last two years I was the entire staff for the 3000. Not a great deal of detailed knowledge of the system is necessary. Technicians can use it without much training. I'm very much sold on the 3000. And it's definitely a complete system—not a minicomputer."

"It allowed us to run eight times the volume at a third the cost. No minicomputer could do that!"

The above statement was made by the corporate banking division EDP manager of a major California bank. He also said:

"We've had the 3000 for over nine months. A year ago we were on a time-sharing system and the cost became prohibitive. We contacted six different companies to look over and bid on a proposal that defined our needs. HP was the only one that could handle our total application of management information for the Corporate Banking Division. The 3000 is not just a mini—it's much more. We're constantly amazing people here with what we can do. It's not hard to operate, not hard to cope with. But our favorite topic is that we're paying less than one third of what we were paying and running four times the volume. And this year, we'll double our volume again. That's eight times greater and less than one third the cost.

That's really productivity!"

"We found the only thing mini about the 3000 was its price."

When we asked the EDP center manager of another major manufacturing company about the 3000, that was what he had to say. He also had this to say:

"Our computer needs include both scientific and commercial applications. We were phasing out our teleprocessing terminal and our Environmental Monitoring Division's computer. So we started looking. We spent several months studying computer systems, and rated them on speed, versatility and ease of operation. The result of our study showed that the HP 3000 provided these requirements and had the best cost/performance ratio. We didn't fully realize the potential of the 3000 until we started programming it. We have experienced a significant cost savings in the seven months we've had the 3000 and we expect a greater savings in the months ahead. We really like the interactive CRT for programming and data input. Being a multi-programming system we can have many users on at the same time. The power and speed of the 3000 is equal to a large machine. It's no mini. Calling it the Mini DataCenter is more accurate. I'd definitely recommend the 3000 to other potential users. In fact, we already have. We feel they would be money ahead."

We're glad these and other users of the HP 3000CX set us straight. We called it a minicomputer because its state-of-the-art technology lets us sell it for a minicomputer price. From now on we'll call it a Mini DataCenter.

We want you to get the whole story. Write us for your copy of our HP 3000CX Mini DataCenter booklet. We know you'll find it interesting, informative, and maybe a bit surprising.

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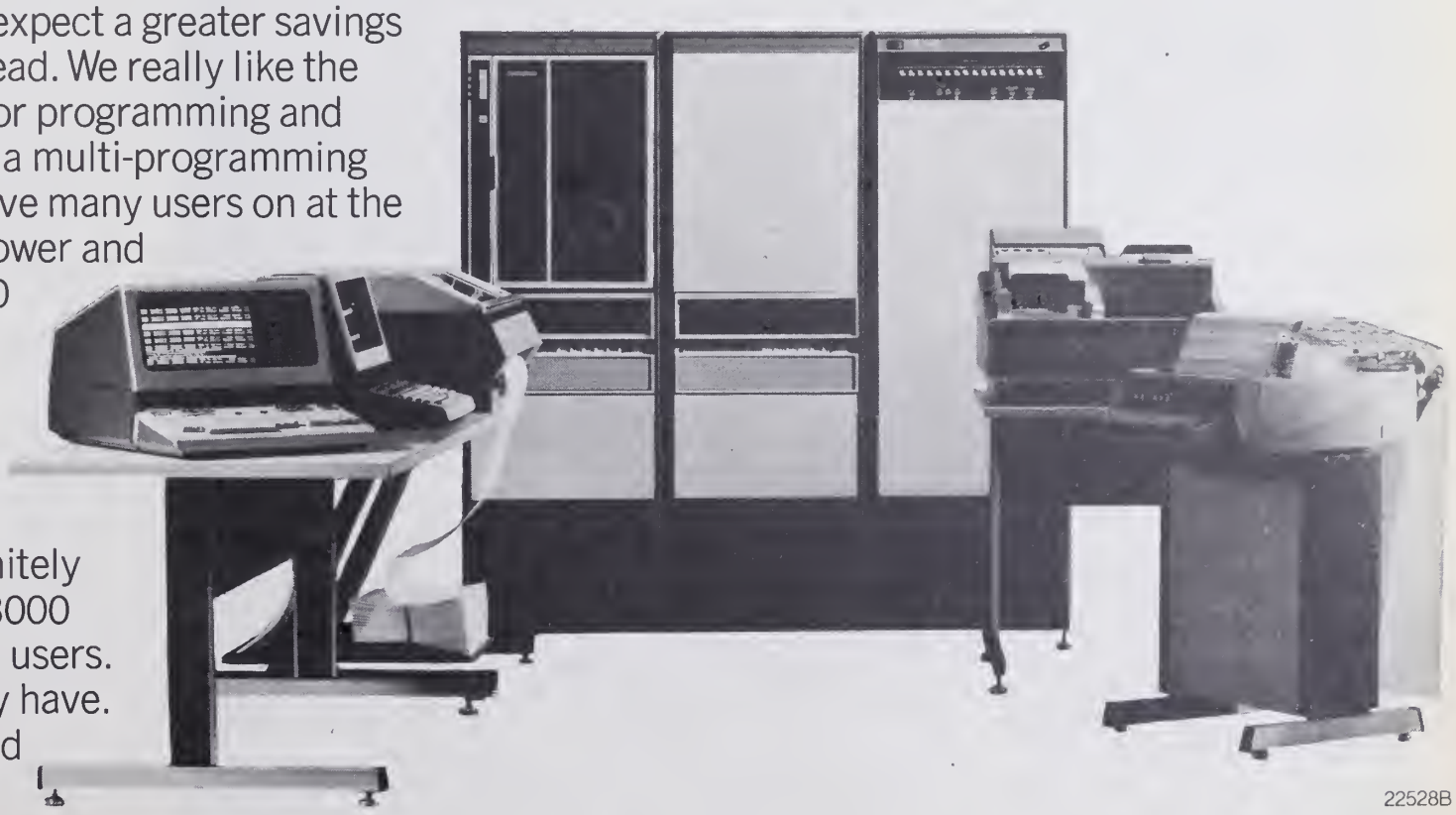

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Planning Helps British DPers Handle Population Boom

LEICESTER, England – One spring night in 1974, the population of Leicestershire County jumped from 510,000 to 810,000. A reshuffling of county boundaries – rather than any run on local maternity hospitals – brought the sizable increase.

And this presented a considerable challenge to the County Council, whose administrative functions resemble those of an American state government.

Fortunately, a 1972 report assigning the new boundaries gave Leicestershire time to plan ahead for providing the additional services in many areas.

It was apparent that a far greater burden would fall on the county's data processing operations: "We foresaw that our ICL 1902A system would be inadequate not only for meeting the additional tasks, but also in handling the growing demands for computing services from the local authorities within our area," Ray Hale, who is responsible for DP operations, recalled.

In this regard, Hale explained, more and more user departments have been requesting their own terminals for access to the computer.

"In addition, we had to keep in mind that a report on 'Computer Development in Local Government' had recommended the creation of a limited number of DP centers on a regional basis to give local authorities direct access to large-scale computing facilities," he said.

After considering several manufacturers' equipment, the county decided to acquire a Univac 1106 system on the basis of cost/performance, the Exec 8 operating system and the system's communications capabilities.

"Also, we believed that Univac's Data Management System (DMS) 1100 would be particularly suitable for implementing the applications we were planning for the computer," Hale said.

The 1106 system consists of a main memory of 131K words; six 8460 disk drives with a total storage capacity of 360M characters; four Uniservo 6C magnetic tape drives; and a Univac 9300 subsystem with card reader, two printers and a communication terminal module controller.

From Birth to Age 20

The computer's workload involves practically every type of service already handled by the County Council.

Administration of health services throughout the county for children from birth to 20 years of age, for example, is one of the main tasks. Every birth recorded in the county is placed in the computer's data base.

From that point on, parents receive postcards generated periodically by the computer inviting them to take their children for inoculations and vaccinations at scheduled appointment times.

At the same time, the system produces lists of these scheduled appointments for the physicians administering the shots. As many as 16 appointments can be scheduled for each child up to the time he enters school.

When the child reaches five years of age, the school entry age, the system makes an appointment for a general medical examination. It also prepares a medical examination form, which is sent to the school's medical authorities for the examining physician to complete in considerable detail.

The completed forms go back to the DP department, where the information is keypunched on cards and entered into the child's individual medical file in the computer.

Information from additional medical examinations performed periodically throughout the child's school life is also entered into his file in the computer's data base.

Leicestershire's computerized school medical record system has been endorsed by the UK's National Computing Centre and the system has been taken over by the national government's Department of Health in London for implementation throughout the country.

Under the present system, the medical files in the data base are maintained up to the age of 20. In the future, the possibility exists that the medical files could be preserved throughout a person's lifetime. However, the county plans to keep lifetime records of blind, mentally and physically handicapped persons in the data base.

Land Planning

Land planning is another important function run on the 1106. The information on every plot of land in the county, entered in the data base, includes such details as records of planning commission approvals or rejections of applications for usage, whether the land is subject to flooding and whether it will be used for projected highways or any other future uses.

District councils look at the fine detail of this data to act on specific requests by owners, such as applications for building permits. The County Council also uses the data to check whether the requests will conflict with countywide planning schedules.

Previously, this kind of information was kept in a manual filing system, and it could take several weeks to assemble all the necessary data to act on the request.

The computer's data base also contains information on all property – ownership, value and changes in value. This is a help to taxing authorities, many of whom have their tax bills prepared on the system.

Both the county surveyor and the county planning officer have access to the computer's land and property files through DCT-500 terminals installed in their offices.

Another program run on the 1106 records road accidents in the county. All relevant details, such as the state of the road and weather conditions, are entered into the records, enabling a profile of high-accident areas to be assembled so authorities can take remedial action.

Financial applications on the system encompass the county payroll for some 30,000 employees, budget preparation, general accounting and cost accounting for schools and county institutions such as homes for orphans and elderly persons.

Looking to the future, Hale anticipates the computer's workload will constantly be growing. Much of this larger burden, he feels, will come from a considerable expansion in the data communications area – particularly from the local authorities as they become increasingly aware of the advantages of computer power.

Mini Bits

DEC Offering Supports 'Do-It-Yourself' Repairs

MAYNARD, Mass. – Digital Equipment Corp. (DEC) has established a product line expressly serving the spare parts needs of customers who perform their own computer hardware maintenance.

Formerly a part of DEC's field service organization, the Customer Spares Group's product line will supply products and services ranging from spare components and test equipment to customized spare packages.

The group was organized primarily to support customers whose service needs are complicated by divided maintenance responsibility, remote location, security or economic considerations.

Customer Spares will offer its products in many forms, including loose-piece components, modules, subassemblies, prepackaged kits, modification kits, tools and test equipment.

Recommended spares lists for the top 100 DEC products are carried on a Decsystem-10 file. By accessing this file, DEC said it can provide a complete list of recommended spares for any PDP series configuration.

PAI Adds Ticket Printer

SHELTON, Conn. – Practical Automation, Inc.'s (PAI) DMTP-5 printer prints alphanumeric information across the width of a standard multipart ticket. Both horizontal character pitch and vertical line pitch are variable.

The device, through porogramming, is said to be able to print virtually any character or symbol in almost any position on the ticket.

The print technique is impact dot matrix. The high-impact force and long needle stroke of the print head permits variations in the number of copies, the firm said.

Operation is fully automatic and requires the operator to present the ticket to the printer where it is sensed, captured and motor-driven to an internal stop.

After printing of a data set (up to 37 lines), the ticket is ejected by actuation of a separate control line. Data input is Ascii bit parallel, serial, parallel binary or RS-232C.

Print rate is approximately 2 line/sec with a line length of 25 characters.

The unit is priced at $263 in lots of 100 from PAI at Trap Falls Road, 06484.

DEC Configures Low-End PDP-11

MAYNARD, Mass. – A standard packaged hardware configuration for the PDP-11/10 minicomputer system priced 15% lower than the equivalent components was announced by Digital Equipment Corp.

Designated the PDP-11T10, the new package is priced at $22,000.

The configuration includes a PDP-11/10 CPU with 16K words of core, dual 1.2M-word RK05 disk pack drives, an LA36 30 char./sec terminal, bootstrap loader, cabinet and mounting hardware.

Facit-Addo Introduces Tape Punch

SECAUCUS, N.J. – Facit-Addo, Inc. has a tape punch in a rack-mounted configuration with full tape handling and tape-low/tape-out indication.

Called the Facit 421.132.01, the model is based on the Facit 42-8033 punch-head mechanism. Two versions are available: a 19-in. standard rack mount and another version for desk top installation.

The unit is priced at $1,095 from the firm at 501 Winsor Drive, 07094.

With Varian V-74

Two-Man DP Group Handles Letter Carriers' Records

WASHINGTON, D.C. – When the National Association of Letter Carriers here recently installed a minicomputer to take over the duties then being performed by a distant, time-sharing computer, the whole DP department celebrated the event.

One month later, Allen G. Cornell, who was then the "whole DP department" (it has since been expanded by two), was productively and more economically handling the many tasks required by this large national union headquarters, using a Varian Data Machines V74, 48K memory system.

Working alone, Cornell had developed a library of about 50 programs (there are now about 100) in that short time to deal with payrolls, dues deductions, governmental reports, retirement funds and a variety of business relating to servicing the union's almost quarter-of-a-million members.

The switch from time-sharing another union's system through a remote terminal to an in-house compact computer has also netted financial savings.

"We've purchased the minicomputer, added one man and have twice as many programs running on the system as we had before – all for less money. We were paying about $6,000/mo. Now, our maintenance bill is only $1,300, and we have eliminated more than 600 man-hours of manual work annually," said Cornell.

System Functions

Each month, this minicomputer center receives magnetic tapes containing earnings and deductions information from the three postal data centers around the country – San Mateo, Calif.; Minneapolis; and New York.

On the 7-track tapes are names, Social Security numbers, post office and financial data such as dues deducted.

This tape is input to the minicomputer which converts BCD code to Ascii; sorts members by post office, of which there are 5,400; and then divides the total amount collected between the local and the union headquarters.

About a million dollars is returned to the locals each month, and each branch (there are up to 100 post offices in a branch) is credited accordingly.

Other Jobs

The computer also generates several different mailing lists and labels for the union magazine, for branch executives and other special groupings.

The membership files and mailing lists are available on-line as is the accounts receivable data. Varian's software operating system, Vortex II, allows up to 16 jobs to be run at one time on an interrupt basis, according to Cornell.

The accounts receivable ledgers for each union local are on-line, and one of Cornell's programs permits the user to find and display or print a ledger instantaneously from the random file by entering the ledger number.

The ledger contains the accounts for each union branch such as dues collected and expenditures.

The payroll system schedules itself by date. At the appropriate time of month and year, the system produces all the reports required such as summaries to be provided to the government of unemployment reports, civil service retirement data, monthly savings bonds and weekly dues summaries.

There are now eight Assembly language subroutines which Cornell has running. One of them, for example, is a packing subroutine which condenses 300,000 records onto a single magnetic-tape reel that conventionally holds only 30,000.

The system also includes: three 9-track tape drives; one 7-track, 100M-char. disk; a 1,200 line/min printer; another printer – 165 char./sec; a 300-card/min reader; and four display/hard-copy terminals.

Sonic Digitizer Converts 3D Objects

SOUTHPORT, Conn. – A three-dimensional 3D version of its Model GP-3 Graf/Pen sonic digitizer has been developed by Science Accessories Corp.

The Graf/Pen Model GP-3/3-D is used to convert descriptions of 3D objects into digital form suitable as input to DP systems. This is accomplished by generating sets of X, Y and Z coordinates for points within the space bounded by the linear Graf/Pen sensors.

Slant range distances to each of the three axes are generated and converted to orthogonal coordinate sets in the software of the data system, the firm explained.

A 3-D object – real or imaginary – is placed within the operational area of the Graf/Pen. The operator then traces the object with a stylus which generates supersonic pulses, either on command or continuously.

The time for the sound wave to reach each of the three linear microphones is a measure of the distance of the stylus from the axis along which the microphone lies.

Sensor lengths – which define the active area of the Graf/Pen – are available up to 24 in. Standard size is the cube enclosed by 14-in. sensors.

The 14-in. model is priced at $5,800 with interfaces ranging from $500 to $2,000. The firm is at Kings Highway West, 06490.

One Mini Outclasses Two CPUs In Engineering/Business Mix

CUPERTINO, Calif. – A major fabricator of pressure vessels is using its new minicomputer to handle tasks faster and more efficiently than the two IBM computers it is replacing.

Nooter Corp. a St. Louis-based company of over 1,500 employees, uses the mini for design calculations and numerical control in the building of large pressure vessels of all weldable metals (including such metals as titanium and zirconium) and for administrative activities like payroll and shop scheduling.

Pair of IBM CPUs

"For a number of years, we have used a pair of IBM computers for our data processing work," Bill Burggrabe, DP manager, said.

The older of the two, a Model 1130, created paper tape for the numerical control of the machinery used in building the vessels, made the necessary mechanical and thermal design calculations and ran an on-line plotter.

The other system, a Model 360/20, handled the large batch administrative computing.

"Now, with one Hewlett-Packard 3000, we will be able to combine both roles in a single system that is only a fraction of the size," Burggrabe said.

128K Core Memory

"Taking advantage of the system's on-line capabilities, our engineers use the HP-designed remote job entry software to help solve some of the larger, more complex engineering design problems," he added.

Hardware consists of the Model 3000 with 128K core memory, a 2M-byte fixed-head disk, a 47M-byte moving-head disk, a 600 line/min printer, a 200 line/min printer, a card reader and punch, paper tape reader and punch, plotter and magnetic tape.

3M Cartridge Fit to DEC, DG

PLAINVIEW, N.Y. – The Model 2200 tape storage system from Qantex utilizes the 3M data cartridge and the Qantex 600 tape drive with read-write speed of 30 in./sec, rewind speed of 90 in./sec and packing density of 1,600 bit/in. phase-encoded.

It can be provided with either one or two cartridge tape drives with storage capability of up to 5.76M bytes for a dual-drive system.

The drives are available with 1-track, 2-track or 4-track read-after-write head. Each track is either computer-selectable or manually selectable through a front panel switch, the firm said.

The built-in Ansi-compatible tape formatter offers features such as high-speed search at 90 in./sec and command chaining to emulate a disk where no computer interrupt is requested until the proper tape mark is found.

The Model 2200 is also being offered with interfaces for the Digital Equipment Corp. PDP-11, Data General (DG) Nova and the Rolm and Intel 8080 computers and microprocessor.

The interfaces for the PDP-11 and Nova were designed to be software-compatible with the cassette systems supplied by DEC and DG.

Prices for the Model 2200 start at $2,175 without computer interface and $2,570 with interface from the firm at 200 Terminal Drive, 11803.

Tape Reader Works At 150 Char./Sec

SAN GABRIEL, Calif. – A paper tape reader complete with TTL interface and priced at $250 has been announced by Addmaster Corp.

The Model 601 employs hermetically sealed glass and metal phototransistors for light sensing. It has only one moving part and reads any standard tape at 150 char./sec asynchronously, the firm said.

The unit is bidirectional, stops on character and automatically detects taut tape and end of tape.

Addmaster Corp. is at 416 Junipero Serra Drive, 91776.

Controller Fits Single Nova Slot

ANAHEIM, Calif. – A magnetic tape controller that combines phase-encoded (PE) and NRZ formats on a single board and fits a single slot in Data General Nova computers has been developed by Western Peripherals Corp. (WPC).

The controller, available as the Model TC-120, includes the board and tape drive cabling. It is also available as the TS-120, which includes tape drives and cabling in a fully integrated and tested system.

The TC-120 is said to be able to mix 7-track and 9-track NRZ, PE or dual-density tape units in any combination up to eight units and 4-6-6 pack on 7-track, which allows the user to do core memory dump onto tape.

Read-and-write on the fly without special software implementation is another feature that allows automatic nonstop operation for consecutive read/write operations on the same tape and for saving operation time between multiple tape units, the firm said.

A 33-word data buffer instead of the usual 2-word buffer gives greater flexibility in programming data transfer to the computer by relieving the data channel servicing requirements of the tape controller, the firm added.

Software Compatible

Units are software-compatible with all Nova and Eclipse minicomputers plus Digital Computer Control's DCC 116. Connection with the tape deck is through the rear of the Nova, using the standard mother board connectors, the firm said.

All tape drives designed for compatibility with the industry standard interface can be used with the TC-120. These include drives operating at 12.5- to 125 in./sec from Pertec, Wangco, Cipher, Kennedy and Bright.

The controller sells for $3,500 WPC said from 2893 E. La Palma, 92806.

Miniworld Products

For Documation Card Readers

PSI Analyzer Works in the Field

NORRISTOWN, Pa. – The Model 100 card reader analyzer from Peripheral Sciences, Inc. (PSI) is a test instrument designed to field-test Documation's series M and D card readers.

Until now, PSI explained, diagnostic work was difficult on card readers at user sites and very often required extensive work. Work done in the field is slow and costly because of the inability to easily isolate and test the card reader, apart from the full computer system, and run it independently at dynamic speeds in order to pinpoint the cause of failure.

In use, the Model 100 Analyzer is plugged into the card reader interface connector. Using a prepunched deck of identical test cards, the field serviceman loads the first card and then, column by column, steps through memory to ensure the card was correctly read.

The analyzer simultaneously tests all 19 interface signals and pinpoints any malfunction in these signals, the company said. Once the first test card is read and stored in memory, the balance of the test deck is read at the maximum operating speed of the reader.

Each card read is compared, column by column, against the stored test data to determine whether the reader is operating successfully.

If an error does occur during this dynamic testing, the analyzer will halt the card reader, display the column in which the error occurred, display the data highway at the time of the error and display the test data as stored for that column.

The analyzer is also equipped with a TTL logic tester which, when used with the test lead included, enables the field serviceman to examine other signals in the card reader.

The Model 100 is priced at $419 from PSI at 203 E. Main St., 19401.

Motorola 6800 Base Of Hollinbeck Micro

BURNSVILLE, Minn. – Hollinbeck Enterprises has introduced its Motorola 6800-based microcomputer system.

The basic system has a Shugart dual diskette, up to 64K of memory, a 6800 CPU with two teletypewriter TTY/RS-232 I/O ports, a microprogrammed diskette controller and a desktop enclosure.

Software includes a disk operating system, assembler, linking loader and Basic compiler. The full configuration leaves four 8-in. by 14-in. card slots open for customer use.

An 8K paper tape system is priced at $4,000 in single quantities and a 16K diskette system costs $7,500 from the firm at 12 Walden, 55337.

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BOSTON, NEW YORK, WASHINGTON, D.C., ATLANTA, DETROIT, CHICAGO, DALLAS, LOS ANGELES, SAN FRANCISCO

Four Million Gallons of Oil Fuel Use of Minicomputer

LEOMINSTER, Mass. – A minicomputer does everything but make deliveries for East Side Oil Co. here.

East Side is a retail dealer delivering four million gallons of fuel oil annually to 2,800 accounts. Through acquisition of smaller companies, business has tripled over the past few years to the present volume.

Yet, the company has not added a single employee or delivery truck to the expense side of the ledger.

The company, which started out 15 years ago with hand-written delivery tickets, began producing tickets electronically by running computer cards through a computer owned by a service bureau.

This "batch" processing involved transporting cards and tickets between the oil company and the service bureau. Driving back and forth was cut in half when East Side installed a terminal in the Leominster office that connected to the central computer over telephone lines.

After some investigation, East Side Oil discovered that, for the same monthly cost, it could have its own in-house system, eliminate computer cards and just about unbundle itself from paper.

In May of 1974, General Services Corp. of Watertown, Mass., a company specializing in "turnkey" business systems using Digital Equipment Corp.'s Datasystem-340, installed its fuel oil package at East Side Oil.

System hardware consists of a PDP-8/E central processor with 16K bytes of core memory storing a master file of all the data needed to maintain up to a capacity of 4,000 customers. Information is accessible on a VT05 CRT display terminal or can be printed out on a line printer which produces tickets and monthly bills at the rate of 165 char/sec.

Far from being timid about approaching the minicomputer, office personnel prefer it to flipping through the countertop binder of printout sheets. When a customer calls with a question, whoever takes the call goes to the CRT terminal, taps out the account number on the keyboard and the account information comes up on the terminal screen.

The minicomputer's master file includes all the information about the customer from the date he started doing business with East Side to the date and check number of his last payment.

The minicomputer's master file holds information on a customer's service contract, the date of his last cleaning or service call, the date he is due for the next call, size of his tank and a record of all deliveries for the year, including special instructions for the driver who brings the oil.

"It once took up to 20 minutes to get all the information a customer might require. Now we have it in a fraction of a second," said Larry Huff, company manager.

As payments are received, they are immediately entered into the computer, automatically updating the customer's account. "Most service bureaus will not post payments until the next day," said Huff.

"The company's delivery area is divided into 10 zones. When we call for a forecast, the computer prints out all the tickets for the degree day due, according to these zones. A driver is given tickets for several zones at one time. The system eliminates small nuisance deliveries and keeps the number of trucks necessary to cover the territory to a minimum," said Huff.

Last year, when East Side bought a small company with 380 customers, the first thing it did was sell the acquired company's trucks. All 2,800 customers can be handled with four trucks while another company of similar size might need three times that many.

The delivery driver makes corrections on the ticket when he is at the door. He might note an incorrect fill location, vicious dog or child with a BB gun in residence. Significant changes are put into the computer when the driver brings the tickets back with the fuel delivery data. This simplifies the work of the next driver and also solves legal problems that arise when the full name, address and delivery information on the ticket are incomplete, illegible or inaccurate.

"The minicomputer will spot incorrect information and nag us until it is corrected. If 44 gallons or 1,044 gallons of oil are delivered to a customer with a 1,000-gallon tank, the computer stops and signals that something is wrong and will not give in until it is corrected," said Huff.

At billing time, East Side loads the line printer with Datamailer forms and the minicomputer fills in gallons delivered, price, payments, service and installation charges, if any. The entire billing is out and ready for mailing in three hours. Before electronic equipment, billing was an ongoing process absorbing the time of up to seven people, according to Huff.

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Structured Design 24-26—New York
Structured Programming 16-17—Indianapolis
Structured Programming in Assembler 29-30—Toronto
Structured Programming in Fortran 22-23—New York
How to Teach Structured COBOL 22-23—Ottawa
How to Manage Structured Programming 22-23—Chicago
Principles of Telecommunications 18-19—Chicago
Design & Installation of On-Line Computer Systems 29-01—New York
Structured Data Base Design 22-24—Vancouver
How to be an Effective Data Base Administrator 25-26—Vancouver
Techniques for Improving System Performance 29-30—San Francisco
Planning for Computer Privacy and Security 22-23—Ottawa

October

Structured Design/Programming Workshop 20-24—Washington
Structured Design 1-3—Quebec City
Structured Programming 2-3—Ottawa
Structured Programming in Assembler 16-17—New York
Structured Testing 23-24—New York
Structured Analysis 16-17—Washington
How to Teach Structured COBOL 16-17—Chicago
How to Manage Structured Programming 20-21—Toronto
Advanced TP Network Design 15-17—Chicago
Design & Installation of On-Line Computer Systems 27-29—Ottawa
Microprocessors 14-15—New York
Structured Data Base Design 6-8—New York
How to be an Effective Data Base Administrator 9-10—New York
Techniques for Improving System Performance 20-21—Toronto
Data Base Management—1975 1—Montreal/22—Chicago

November

Structured Design/Programming Workshop 3-7—Edmonton
Structured Design 3-5—Toronto/ 10-12—San Francisco
Structured Programming 20-21—Washington
Structured Analysis 24-25—Toronto
How to Teach Structured COBOL 10-11—New York
Principles of Telecommunications 17-18—New York
Advanced TP Network Design 19-21—New York
Design & Installation of On-Line Computer Systems 10-12—San Francisco
Structured Data Base Design 3-5—Ottawa/10-12—San Francisco
How to be an Effective Data Base Administrator 6-7—Ottawa and 13-14—San Francisco
Techniques for Improving System Performance 13-14—New York
Planning for Computer Privacy and Security 6-7—Washington
Data Base Management—1975 19—Boston

December

Structured Design/Programming Workshop 8-12—New York
Structured Design 8-10—Washington
Structured Programming 4-5—Toronto
Structured Testing 1-2—Ottawa
Structured Analysis 4-5—New York
Principles of Telecommunications 8-9—Washington
Microprocessors 4-5—Toronto
Structured Data Base Design 8-10—Washington
How to be an Effective Data Base Administrator 11-12—Washington
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Up, Up and Away...

PALO ALTO, Calif. – An 11-oz., $795 pocket calculator that can be programmed somewhat like a computer was scheduled to play an important role in the historic Apollo-Soyuz rendezvous in space by backing up an on-board computer.

The Hewlett-Packard HP-65 programmable pocket calculator was expected to calculate two critical midcourse correction maneuvers just before the linkup of the U.S. Apollo and the Russian Soyuz spacecraft.

The calculator also was slated to be used as a backup for Apollo's on-board computer for the final maneuvers prior to rendezvous and docking. It will be used to solve the problems, and its answers will be compared with those of the on-board computer.

In the event of an on-board computer failure, however, the calculator will provide the only available solution for the midcourse maneuvers, since the spacecraft will not be in communication with ground stations at that phase of the mission.

Scientists at the National Aeronautics and Space Administration have written programs of up to 1,000 steps and recorded them on the small magnetic cards (100 steps per card) used by the calculator. The astronauts will feed these cards into the unit to automatically perform the critical calculations.

In previous space flights, backup maneuver calculations were made manually, using charts.

Loaned Mini 'Handicaps' Mich. Powder Puff Derby

BOYNE CITY, Mich. – Finding a computer in this northern Michigan resort area is a difficult task, especially if you are the chairwoman of the All-Women's Transcontinental Air Race, better known as the Powder Puff Derby.

But through an interesting set of circumstances, Winifred Duperow, chairwoman of the derby, discovered her college freshman son, Douglas, could program a System 2200 made by Wang Laboratories. And she also learned the Wang minicomputer could be transported easily by station wagon to this area.

With phone calls and personal contacts, Duperow convinced Wang officials in suburban Detroit to loan the System 2200 to the derby so that handicaps could be computed and daily score sheets and final standings printed for the 2,600-mile air race.

The race had 94 aircraft entered, each with a woman pilot and copilot. First prize was $5,000.

Doug Duperow learned to write Basic language computer programs on the mini in the math department at Ohio Northern University during the past year. When his mother was unable to find a computer in this area to run the existing derby handicap calculations, Doug volunteered to help out – using the computer at the college and making arrangements for the loan of the other system.

The handicap system is used in the women's aircraft race to equalize the competition among the different planes. Doug's program computed the points and point total for each of the 100 entries after they flew by each checkpoint on the eight legs of the four-day race.

Stored within the computer also was information about each entry: names of the pilot and copilot, sponsor's name, type of aircraft, entrant's colors and aircraft number. This information was used to print the daily and final score sheets.

Doug Duperow also calculated gas consumption for each entry.

The Wang 2200 computer includes a 16K-byte central processor, a CRT display, cassette tape drive and an output typewriter.

Adapso Schedules Turnkey Seminar

MONTVALE, N.J. – The Data Facilities Management Committee of the Association of Data Processing Service Organizations (Adapso) has scheduled its first seminar on turnkey small business computers.

The seminar will be held at the Ramada Inn in Saddle Brook, N.J., on July 30 and 31.

Brinson Weeks, committee chairman and president of Computer Management Corp., will codirect the seminar with William Moseley, executive vice-president of the same company. Cost for the two-day seminar is $85 for Adapso members, $110 for nonmembers.

The seminar will be introductory in nature and will highlight significant opportunities and problems for data processing companies.

The emphasis of the program will be on commercial, business-type applications use; stand-alone systems, distributed processing or data bases and dispersed data entry/validation; and development of long-term client relationships. Adapso is at 210 Summit Ave., 07645.

Industry Representatives Urge Preservation of 'Disc'

• CIA Survey Shows 'Disc' Contributes To Rise of Exports

By a CW Staff Writer

WASHINGTON, D.C. – The domestic international sales corporation (Disc) program has enabled the smaller U.S. computer manufacturers – those whose revenues fall in the $10 million to $200 million range – to compete against IBM in the international marketplace, according to a survey reported recently by the Computer Industry Association (CIA).

The survey results were offered for the record of the House Ways and Means Committee hearings on tax reform.

Of the association's 35 members, all but three are currently exporting a significant part of their domestic production under the Disc program, the survey showed.

In 1971, before the Disc program began, some $10 million in revenues was brought in by CIA members from exported goods. In 1972, that figure grew to $38 million, with 75% of the goods exported through Discs.

In 1973, that percentage leaped to 94% for total export revenues of $105 million.

From there the percentage of goods exported through CIA members' Discs remained about the same, but exports nearly doubled to $170 million in 1974 and to an estimated $290 million in 1975.

Source of Capital

The ability to defer 50% of the income tax on these sales and use the funds in further development of export sales has "provided a source of critically needed capital" at a crucial period in the development of the U.S. computer industry and at a time when public financing has dried up, the CIA statement said.

The estimated $265 million in Disc revenues in 1975 from the association's members represents pretax earnings of approximately $32 million. Of this, some $8 million will be paid into the U.S. Treasury as tax and $8 million deferred – in a sense loaned to the companies on a year-to-year basis as long as they continue to qualify and the Disc program continues, according to the statement.

In the meantime, 9,000 persons have been productively employed and are paying personal income taxes.

The survey data entered into the record was accompanied by the warning that "a healthy and vigorous U.S.-based computer industry is crucial to the economic and military well-being of America. If we lose our technological leadership in this vital area, and if we allow one or two giant multinational corporations to shift our know-how and our production capacity to foreign soil, we will quickly lose the edge we hold in these vital areas."

Foreign governments almost without exception are providing massive subsidies to their domestic computer industries and inducements to American manufacturers to establish operations on their shores, the CIA statement asserted.

Simon Urges Support Of 'Disc' Tax Benefits

WASHINGTON, D.C. – In testimony before the House Ways and Means Committee last week, Secretary of the Treasury William E. Simon supported continuing domestic international sales corporations (Disc).

Eases Cash Flow

"In a period of capital shortage, the Disc provides a significant cash flow for domestic investment, and its elimination must be viewed simply as an increase in taxes of those companies which are trying hardest to manufacture and export from this country at a time when employment is down and investment capital is badly needed," he said.

Simon noted that the U.S. will soon begin multilateral trade negotiations in Geneva which "we hope will lead to international examination of tax incentives for trade and international investment."

Repeal of the Disc program could prejudice the prospects of obtaining fair and uniform tax rules, he explained.

Finally, it is "too early to assess [Disc's] effects on exports and employment," he said. "All that we know for sure is that exports have increased very greatly over that period."

•'Economic Plasma' Of U.S. DP Firms: Datapoint President

By Nancy French
Of the CW Staff

WASHINGTON, D.C. – Income tax deferrals permitted under the government's domestic international sales corporation (Disc) program are not a tax loophole, but rather the "economic plasma" of the U.S. independent computer manufacturers, Harold O'Kelley told members of the House Ways and Means Committee last week.

O'Kelley is president and chairman of the board of Datapoint Corp.

Appearing on behalf of the Computer Industry Association (CIA) at the committee's hearings on tax reform, O'Kelley pointed out the Disc program has "brought the U.S. into a computer leadership role and one of worldwide technological superiority" while helping to "expand domestic capital formation in a tight money economy."

In addition, O'Kelley said, the program has created thousands of jobs in the U.S. computer industry.

Representatives of large corporations as well as the CIA urged committee members to preserve the Disc program.

Under the three-year-old Disc program, the Federal Government permits a U.S. company with an overseas subsidiary known as a Disc to defer income tax indefinitely on one-half of the earnings from goods sold overseas through its Disc.

The House Ways and Means Committee is scrutinizing the Disc program, as well as other corporate tax incentives, in an effort to close tax loopholes and draw more money into the federal treasury.

Citing his own company as an example, O'Kelley told the committee that in 1972, prior to the establishment of Datapoint's Disc unit, only $1.1 million in revenue came from international sales.

In 1973, after the company's Disc began operations, that figure leaped to $10 million and, in 1974, jumped again, to $17.6 million.

"We buy all our components from U.S. suppliers, thereby multiplying this beneficial economic passthrough of imported dollars," O'Kelley said.

More than half of IBM's revenues are derived from overseas sales, according to O'Kelley, but by comparison, the bulk of those products are built in foreign plants by foreign workers.

The tax deferral provided by establishing a Disc offsets, to some extent, the tax advantages, plant construction subsidies and other inducements given the larger U.S. manufacturers to establish production facilities on foreign soil.

"The loss of Disc provisions now would give us very clear but limited alternatives – producing products offshore, buying components offshore and becoming a capital generator, job creator and technology base for a country other than the U.S.," O'Kelley said.

He said he was "at a loss to understand" the economic logic of repealing the Disc export incentives. The committee should be considering expanding export incentives, not repealing them, he added.

"I believe that the Treasury Department's original proposal for a 100% export income deferral would do some remarkable things for virtually every segment of our economy and put people back to work," he said.

O'Kelley believes his company's growth can be directly linked to the operation of Datapoint Domestic International Sales Corp., which began in January 1973.

Fifty-three percent of the company's 1973 revenues and 52% of the company's 1974 revenues were due to international sales, he said.

Made Firm Competitive

Through a Disc, Datapoint was able to "build volume and capital," he said. It allowed the company to create a price/performance structure with which it could compete with foreign computer manufacturers in both the U.S. and abroad, as well as U.S. manufacturers that maintain offshore production facilities with their attendant pricing advantages.

Exports represent as much as 50% of the annual sales of the CIA's member companies and are "significant" because "the U.S. computer industry is one of the largest single contributors to our nation's net balance of trade – some $2.6 billion in 1975, up from $2.2 billion in 1974," O'Kelley said.

Key-to-Disk Makers See Advantages to IBM Entrance

By Molly Upton
Of the CW Staff

Reaction to IBM's reconfiguration of the 3790 system with the 3760 operator station by key-to-disk makers ranged from welcoming IBM into the key-to-disk area to some confusion over whether IBM really intends the product for this market segment in a recent *Computerworld* survey.

Generally, spokesmen saw the announcement [CW, July 9] as broadening the market, and none plans to change his product or marketing strategies.

The price of the system, they indicated, is generally in the upper end of higher performance systems.

Nearly all agreed the new entrant will make the scene "more competitive," and some expect IBM enhancements in output such as tape or diskettes to broaden IBM's market.

Both Univac and Computer Machinery Corp. (CMC) saw the move as expanding the marketplace for key-to-disk systems.

CMC's vice-president of marketing, Peter Zinsli, said, "If IBM salesmen actively push the product, it will create a lot more decision making, which is helpful because we get some percentage of the decisions." The number of users considering key-to-disk will increase, he added.

"But we have to have a fair amount of concern, when a firm with IBM's resources enters the market," he said.

Univac's Bill Currie, national sales manager of data entry products, explained, "It is a big job to bring customers to the point where they understand the need for the product. IBM is particularly good at doing that; therefore, that will increase the market size," he said.

Because IBM is addressing only the 370 user with this product, "it will train 100% of the marketplace in the key-to-disk concept, while it goes after only its own 75% of the business," he added.

To Slow Decision-Making

Jay Hill, director of marketing support for Inforex, Inc., said he thinks the announcement will "slow decisions by users" for a few months, and it could have a minor impact on the key-to-disk market.

Explaining he doesn't see the 3760 as "a big threat," he said the 3760 and 3791 seem to be generally priced 30% to 40% over the Inforex 1303 in several configurations.

In addition, the system has several self-imposed limitations such as lacking tape output and needing to be on-line to a 370 with virtual support Model 125 and up.

Inforex plans no changes in its strategy, he said, and will continue with its existing product line. Reception to Inforex's new 3300 file management system indicates the product will have a "bit brighter future than had been expected," he said.

Negative Aspects, Too

Don Fedderson, president of Entrex, Inc., noted IBM's endorsement of the shared-processor concept has both positive and negative aspects.

He agreed with Currie the market should grow as a result of IBM's entry, but added, "I don't think we should underestimate the negative side, that IBM is tying a system to a mainframe and trying to edge the competitors out of that large computing center called the mainframe."

IBM is endorsing the idea of distributive DP, but still linking to the mainframe, he noted.

"Perhaps the most threatening aspects to independent companies are IBM's marketing, servicing and financial strengths; they're obviously a threat to anybody," he said.

In the short term, he doesn't see the entry affecting the key-to-disk scene, but, in the long range, "there may well be, but it isn't clear and evident what its real strategy and intent in this market is." Obviously, it's going to grab all the market it can, he added.

Dan Carter, vice-president of domestic marketing at Mohawk Data Sciences Corp. (MDS), said MDS welcomes IBM's blessing of the key-to-disk concept, but added his firm is still analyzing the IBM cost/performance configuration.

A Bit More Expensive

"We suspect it will be a bit more expensive" than independent systems, he added.

Currie noted the pricing falls in the high end of the range of higher performance products, but not out of the range.

Richard Thompson, vice-president of marketing for Scan-Data Corp. said the pricing is "in the traditional IBM manner."

Another spokesman said the system looks like it is in the upper end pricewise and in the medium range in terms of capability, with its key strength in the communications area.

The announcement looks like one ele-

(Continued on Page 37)

By European Parliament Officer

'Holy Alliance Against IBM' Proposed

By Toni Wiseman
Of the CW Staff

PARIS – "The creation of a strictly European computer industry is unrealizable," said Pierre-Bernard Couste, vice-president of the European Parliament.

Couste proposed the promotion of a computer industry for Europe in association with the nondominant, non-European competitors or, "the Holy Alliance against IBM," according to a report in the French publication, *Zero-Un-Informatique*.

To date, European manufacturers hold a total of 14.5% of the western European market, which amounts to less than 4% of the world market, Couste said.

European states, he cautioned, will have to play the role of catalysts and not that of permanent protectors.

In the case of public markets, the interests of jurisdictionally European companies must not be harmed. This is ambiguous at best, he noted, since, as catalysts, the public powers should favor the European industry without injuring, for example, IBM-France, a jurisdictionally French company.

The European Parliament, for its part, has decided on five priority actions to promote extended DP applications, according to *Zero-Un-Informatique*, including the creation of a central data base of blood and organ donors.

International News

An automatic air traffic control system and a judicial documentation system would also be constructed.

Couste noted that, while the choice of projects was modest, it represents the first concrete measures taken toward a communal DP policy.

On the financial side, the European commission foresees aid to leasing and the creation of a European leasing society, the publication noted.

ICL 2903 Sales Amount to 1,001

LONDON – Only two years after introducing its 2903 system at the Hanover Fair, International Computers Ltd. (ICL) announced its 1,001st sale and, at the same time, introduced three communications enhancements, *Computer Weekly* reported.

The 2903, a small business system, has brought ICL $140.5 million in sales over the past two years, results four times better than any other ICL computer, the article said.

Domestic sales were $53.4 million, with overseas orders accounting for about $87.1 million.

Of the 1,001 orders, 570, or 57%, came from users with no previous computing experience and 23% from previous ICL equipment users.

Sales reports indicated 88 of the 2903s were chosen over IBM equipment, 20 over Honeywell, 16 over NCR, 10 over Burroughs, 13 over Univac and 63 over the equipment of other manufacturers.

The 1,000th order was for a $78,000 system for installation at Strategic Vending Services of Putney, London, to replace a Burroughs accounting machine.

The 1,001st system will replace an IBM System/3 Model 10 at a Stuttgart, West Germany, furniture wholesaler.

Of the three communications enhancements announced, one allows users to make on-line file inquiries using data entry keystations.

The second enhancement, a buffered inquiry system, provides faster access time and greater throughput, ICL said.

Finally, the addition of extra video couplers permits users to increase the number of CRT terminals connected to the system.

Foreign Orders & Installations

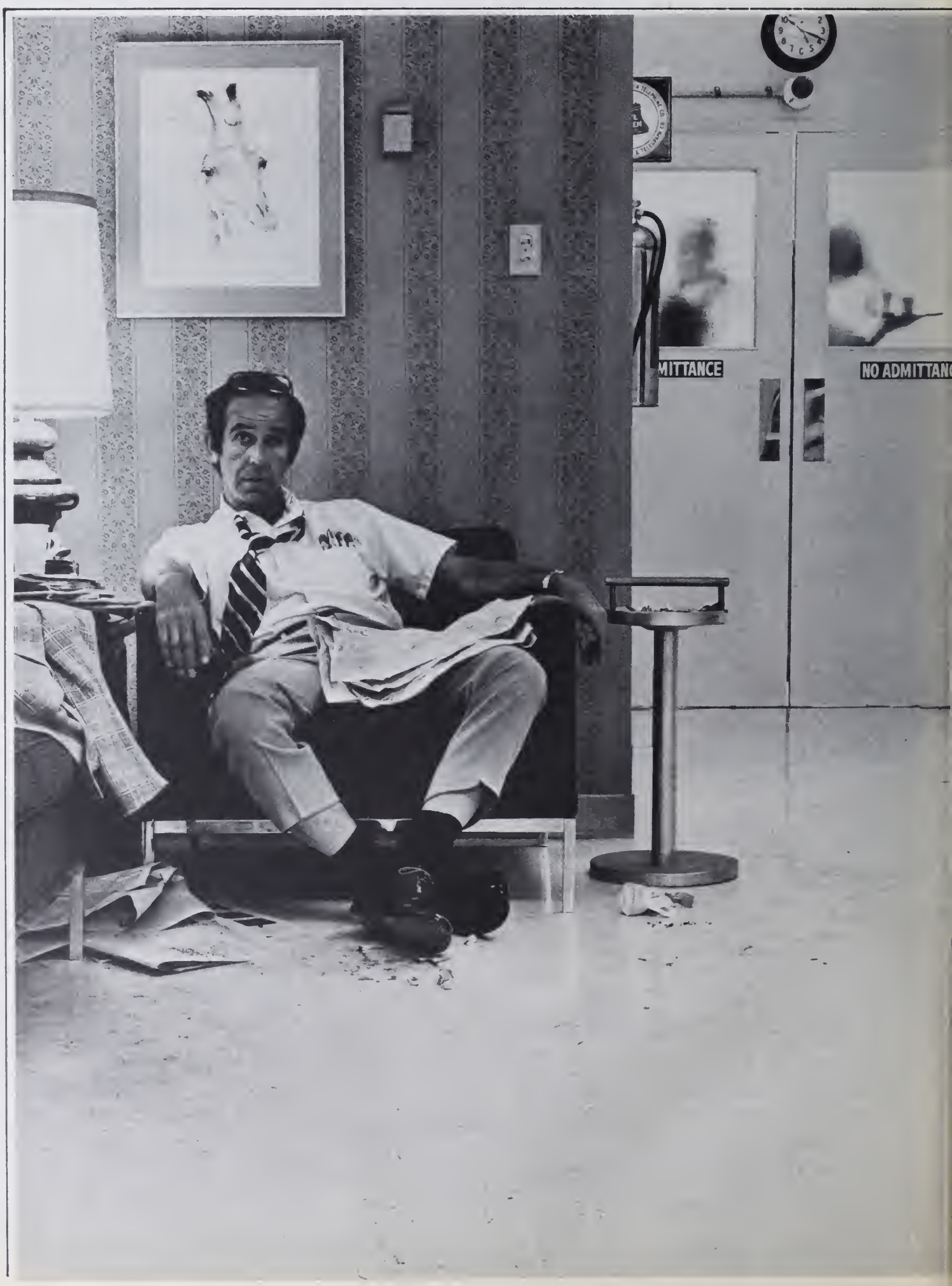
French Space Agency Gets Two CDC Systems

TOULOUSE, France – Centre National d'Etudes Spatiales (CNES), the French national space agency, has installed and accepted a Control Data Corp. 7600 and a Cyber 72, together valued at more than $5 million.

The systems are involved in the supervision of satellite trajectory during launch operations and will also be used for spacecraft development and weather research, as well as cooperative scientific programs with other countries.

Saan Stores Ltd. has ordered 62 NCR 250 electronic retail terminals and 62 NCR 761 cassette data recorders for its stores in western Canada.

Mitsubishi Bank Co. Ltd. has installed a Univac 1110 in its business center in Tokyo for an interbank transfer system.



IBM Price Drops Seen as Effort to Improve Bottom Line

By Molly Upton
Of the CW Staff

NEW YORK – IBM's recent price reductions were an effort to improve the bottom line through fine tuning of its purchase/lease ratio, according to Harry Edelson, senior analyst for Drexel Burnham & Co.

To improve its bottom line, IBM had two choices, he explained: raise rental prices, which would upset end users; or decrease purchase prices, which would antagonize competitors.

Both courses could be construed as fuel for the antitrust suit IBM is now fighting with the government, he noted.

The announcement came after the beginning of the trial, he noted, adding IBM has probably "bet its bundle on the trial."

Before the trial was started, Edelson said he thought it might look good for IBM, if it wanted to work out a consent, to not worry that much about earnings.

"Now that the trial is under way, both sides have got their cards on the table" and IBM no longer considers lower earnings as a possible plus.

The timing of the change in the lease/purchase ratio is especially appropriate since the investment tax credit has been increased, he noted.

This, combined with lower purchase prices, should increase the incentive to purchase, thus improving the bottom line fairly quickly, he said.

"Take a look at IBM's earnings in the past three quarters. The trend doesn't look too good," he noted.

In the fourth quarter, excluding the charge for early retirement, earnings were about $3.27 a share vs. $3.20 a year ago; in the first quarter, they were up a penny, $2.95 vs. $2.94; and in the second quarter, they were down 14 cents.

He noted the second quarter will be a low point on a quarter-to-quarter comparison basis, but does not expect the third and fourth to be down, although the third may stay even.

Whereas last year IBM had a higher proportion of sales to rental than usual, that situation has now swung the other way, and IBM "is trying to walk the middle line."

Edelson noted that, with increasing restrictions, especially on multinational firms, from the Congress, IRS, Securities and Exchange Commission, Financial Accounting Standards Board and others, these firms now have less leeway in managing earnings.

This, in turn, leads to more fine tuning of the lease/purchase ratio, he said.

'80 SOS Sales Could Climb To $150 Million

PALO ALTO, Calif. – Silicon-on-sapphire (SOS) semiconductor sales should grow from $2 million in 1974 to $150 million in 1980 if strong markets are developed by 1976, according to a study by Dataquest, Inc.

"Captive producers, such as Hewlett-Packard, will be very important to SOS and captive production of $25 million is included in the 1980 forecast," the report stated.

If strong markets do not appear before the end of 1976, SOS will probably remain only a speciality technology for military and other small-volume applications, the report predicted.

The Dataquest report said the cost of sapphire must decline to $3.50/sq in. in 1975 and to $1.30- to $2.25/sq in. by 1980 if SOS is to gain a substantial part of the LSI market.

Memorex Plans To Add CCI Gear

SANTA CLARA, Calif. – Memorex Corp. is negotiating to add to its line Computer Communications, Inc.'s (CCI) CC-80 communications processor and software.

The agreement in principle between the two firms also contemplates future joint product and software development with Memorex's service organization supplementing CCI's maintenance organization.

Memorex agreed to purchase about $2.5 million worth of equipment during the first year of the three-year period. Deliveries begin in October 1975.

The agreement is subject to approval by the Memorex board of directors.

Memorex would also become CCI's largest shareholder by acquiring about 11% of outstanding common stock, or 300,000 shares, at a price of $1.50 a share.

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Data Communications Course #1010 – Practical Data Communications Systems & Concepts

Dr. Dixon Doll, the nationally recognized teleprocessing consultant will lead this two-day seminar on the newest advances in data communications. The course covers areas like SDLC, HiD-LoD, DDS, newly approved major revisions to WATS, and the impact of Satellite Carriers.

Total Cost, including workbook, reference materials luncheons and continental breakfasts is $350. Additional registrants from the same company qualify for the reduced rate of $300.

San Diego	**Plaza Int'l Hotel**	**Sept. 29-30**
New York	**St. Moritz**	**Oct. 13-14**
San Francisco	**Dunfey's Royal Coach**	**Oct. 20-21**
Miami	**Hyatt Miami Beach**	**Nov. 17-18**

Data Communications Course #1020 – Advanced Teleprocessing Systems & Design

Also led by Dr. Dixon Doll, this course is a follow-up to course #1010. Special emphasis is given to techniques that minimize operating costs in commercial data communications networks. This three-day seminar covers procedures, approaches, and algorithms for evaluating and cost-optimizing network operations. Total cost, including an extensive set of customized course materials, is $450. Additional registrants from the same company qualify for a reduced rate of $400.

Miami	**Four Ambassadors (Sheraton)**	**Dec. 1-3**

Legal Tools for Computer Contracting and Protection

Under the instruction of Roy N. Freed, a nationally known lawyer, author and educator in the field of computer law, you'll learn how to increase your advantage in dealing with vendors that supply your installation. As well as practical discussion and review of your own contracts, subject areas covered in this 2½-day seminar include: Negotiations, Contracts, Warranties, Avoidance and resolution of disputes, Security, Fraud, Taxation, and Techniques for handling any transaction. Cost for the entire seminar, including continental breakfasts, luncheons and all course materials is $325. Additional registrants from the same company are charged only $275.

New York	**Summit Hotel**	**Oct. 22-24**
San Francisco	**Hyatt Regency San Francisco**	**Nov. 12-14**
Chicago	**Hyatt Regency O'Hare**	**Nov. 19-21**

How to Draft Effective Legal Agreements

This one-day seminar is a complete workshop for non-legal, technical people who may be called upon to draft legal agreements for their company. Also led by Roy Freed, this seminar covers a variety of formal agreements, their structure and the legal factors involved. You'll have all the basic skills necessary to write legal agreements, and you'll be able to spot items that really require the attention of lawyers.

Cost for the seminar, including luncheon and a complete workbook on the subject, is $135.

New York	**St. Moritz**	**Oct. 8**
Boston	**Sheraton**	**Oct. 15**

Data Base Design

Given in association with Leo J. Cohen and Performance Development Corporation, this three-day seminar is a package-independent examination of the techniques required for the design of effective data base systems. The seminar covers Effective Record Design, Physical Storage Techniques, Optimum File Organization/Indexing Techniques, File Integration, and much more.

Cost for the seminar, including course materials, continental breakfasts and luncheons is $350. Additional registrants from the same company qualify for a reduced rate of $300.

New York	**St. Moritz**	**Sept. 22-24**
Denver	**Denver Hilton**	**Dec. 1-3**

Performance Evaluation and Improvement

Saul Stimler, author of *Data Processing Systems: Their performance, evaluation, measurement, and improvement* will lead this two-day seminar on measurement techniques designed to save your installation money. As well as system performance at your own installation, topics covered include: Criteria for quantifying performance, pencil and paper analysis of a system, Benchmarking techniques, Realtime, Batch and interactive time sharing systems.

Cost for the seminar, including continental breakfasts and luncheons and all course materials is $250.

New York	**Summit Hotel**	**Sept. 29-30**
Wash., D.C.	**Marriott at Wash. Int'l. Airport**	**Oct. 20-21**
Chicago	**Hyatt Regency O'Hare**	**Oct. 27-28**
San Francisco	**Dunfey's Royal Coach**	**Jan. 19-20**

How to Increase Programming Productivity

John W. Brackett, PhD, Vice President of SofTech, Inc. will lead this two-day seminar on the state of the art of Software Engineering. Under his direction you will learn how to: create more precise and visible analysis and design; reduce integration problems; improve software reliability; incorporate visible outputs into the software development cycle; increase programmer productivity; and improve programming management methods. Topics covered include: Structured programming, Top-down analysis, Design, Implementation, and Chief Programmer teams. Cost for the entire seminar, including continental breakfasts, luncheons, and all course materials is $300. Additional registrants from the same company are charged only $250.

New York	**St. Moritz**	**Oct. 6-7**
San Francisco	**Berkeley Marriott**	**Nov. 10-11**

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IBM Quarter, Six-Month Earnings Drop

ARMONK, N.Y. – IBM's earnings in the second quarter dropped 2.9% and results for the half were down almost 1% compared with year-ago figures.

The drop was not as severe as many analysts had expected.

Chairman Frank T. Cary commented, "Financial results continue to be adversely affected by inflation and significant declines in outright purchases of DP equipment.

"While the level of purchase activity is somewhat higher than the first quarter of this year, it is still below the very high level of the second quarter of 1974. Incoming orders continue below the rates of 1974," he said.

Rental, Services Up 19.8%

However, rental and service income increased 19.8% over the first six months of 1974, he noted.

During the second quarter, IBM earned $468.8 million or $3.14 a share compared with $482.6 million or $3.28 a share in the record 1974 quarter.

Revenues rose 7% to a record $3.496 billion compared with $3.26 billion in the year-ago period.

Second-quarter sales revenues dropped almost 14% to $1.03 billion compared with $1.19 billion in the year-ago period. Rentals and services revenues grew more than 19% to $2.47 billion compared with $2.07 billion in the year-ago quarter.

IBM earlier had said the 1974 second quarter would be hard to beat.

Six-Month Period

Earnings for the six months were off under 1% to $906 million or $6.09 a share compared with $913.8 million or $6.22 a share.

Revenues rose 8% to a record $6.77 billion from $6.26 billion in the year-ago period.

For the six months, sales revenues dropped 13% to $1.92 billion compared with $2.2 billion in the 1974 period, while rental and services incomes rose over 19% to $4.85 billion compared with almost $4.05 billion in the same 1974 period.

Key-to-Disk Makers Welcome IBM

(Continued from Page 33)

ment of IBM's commitment to total distributed network, he said, calling it a "very natural" follow-on to the original 3790.

Thompson said his gut reaction was the product is a follow-on to the 3790 and not a key-to-disk product, at least in the traditional sense of being a stand-alone unit with magnetic tape output.

"Obviously, we're interested in what it all means and how it impacts us," he said, adding he doesn't expect much, if any, impact.

Endorsement of Key-to-Disk

Zinsli called the announcement an endorsement of the key-to-disk concept and said it indicates IBM doesn't believe all users will go to on-line data entry.

The system is definitely a key-to-disk, with the principal difference in its ability to transfer data via communications only, without a magnetic tape, Zinsli said.

Although Scan-Data and other key-to-disk makers are moving toward more communications capabilities, Scan-Data is still primarily in the stand-alone data entry business, Thompson noted.

He likened the introduction to that of the 3790, which didn't have an impact on key-to-disk, and thought the announcement would be "somewhat in the same category."

Currie added he expects near-term enhancement to the product such as tape or diskette to allow it to output to other IBM systems and probably the rest of the marketplace.

Univac's Robert L. Patterson, program manager for the 1900 Cade system added he doubts IBM will neglect the user base of 360s, System/3s and 32s.

Tax Reform Witness Calls DP Atypical

WASHINGTON, D.C. – In tax reform hearings conducted here last week by the House Ways and Means Committee, Rep. James C. Corman (D-Calif.) asked Harold O'Kelley, president and chairman of the board for Datapoint Corp. whether companies should report earnings and pay taxes, based on the same depreciation schedule.

O'Kelley pointed out that if leasing companies abandoned the two-book system, it would be "a catastrophe for earnings and the ability to raise capital."

"Well, which is an accurate reflection of the company's finances?" Corman asked.

Amid laughter, O'Kelley thought for a moment and replied, "I can't speak for everyone, but our company uses the double declining balance on our lease base. It accounts for a larger charge against earnings in the near term but makes for fewer surprises downstream," he said.

"Would it be fair to say your firm – and your industry – is not typical because of the dominance of one company?" Corman asked.

"That would be fair to say," O'Kelley said.

"Then we had better hear that answer from somebody else," Corman replied.

U.S. Investigation of DG Referred to Local Agency

LOS ANGELES – Data General Corp. (DG) said the U.S. Attorney's office here has informed the company that it has terminated the investigation of complaints made by Keronix, Inc. against DG and others and that no federal indictments are being returned.

"We felt the jurisdiction in this case rests with the local authorities," a spokesman for the office said. The case has been referred to the Los Angeles district attorney's office for examination of the evidence.

Cost-Effectiveness in DP Subject of Wema Seminar

PALO ALTO, Calif. – A two-day seminar on "Making Your Data Processing Cost-Effective" will be sponsored by the Western Electronic Manufacturers Association (Wema) at two locations this summer.

The seminars will be held July 23-24 at Rickeys Hyatt House here and also Aug. 6-7 at the Airporter Inn in Irvine.

Registration information for both Wema members and nonmembers is available from Wema at 2600 El Camino Real, 94306.

In Next Half Decade

Lower Costs Seen Key to Semi Growth

SANTA CLARA, Calif. – "The overriding pervasiveness of semiconductor electronics in the second half of this decade will be due to two factors implicit in the continuing development of solid-state circuits, said Charles E. Sporck, president of National Semiconductor Corp., in a recent speech here.

"Decision logic, already inexpensive, will become very, very cheap; and data-storage-and-manipulation circuity is becoming cheaper all the time," he said.

The major thrust of the semiconductor industry has changed direction since the decade began, he said, from an industry servicing mainly the mainframe computer and military/aerospace marketplace, to one addressing application areas such as data terminals, control systems and solid-state TV sets.

With the new thrust, he noted, it's going to be possible to do more things digitally than before and decision-making machines such as microprocessors will get small and cheaper, while bringing more and simpler-to-use power to the user.

For example, the advent of very cheap semiconductor electronics and the microprocessor – with its increasing power and decreasing cost – makes possible remote, on-site, distributed data gathering and processing.

"In the industrial arena, such systems can monitor and control almost anything and do so entirely within the plant by means of closed-loop systems. It no longer will be necessary to go off-line to some central computer downtown," Sporck said.

"However, the key to the successful market penetration of the microprocessor will be inexpensive ancillary electronics – integrated-circuit transducers, analog-to-digital converters, digital-to-analog converters and so on," he stated.

CLA Elects McArdle to Presidency, Names Smith as 'Man-of-the-Year'

WASHINGTON, D.C. – The Computer Lessors Association, Inc. (CLA) has elected Thomas J. McArdle of National Computer Rental Ltd. as its new president and named Chester R. Smith, DP manager for Chemetron Corp., as Man-of-the-Year.

McArdle succeeds J. Michael Creedon, who resigned from the presidency following his resignation as marketing vice-president of DPF, Inc.

McArdle urged lessors at the midyear meeting to "keep both top management and the DP community aware of the values inherent today in leased computer equipment, particularly the [IBM] System 360 with its enhanced capability through the use of independent peripherals."

The CLA award for Man-of-the-year was based on outstanding DP achievement with emphasis on price/performance and efficiency.

Trade Secret Case Causes Suit Vs. IBM

SANTA ANA, Calif. – Thomas N. Rauscher and John F. Suerta have filed a suit against IBM charging "false imprisonment and malicious prosecution."

The men were previously arrested and released in connection with an investigation into the alleged theft of trade secrets for the 3330 and 3340 disk drives.

An IBM spokesman said "we are aware of the suit, and intend to forcefully contest it to completion."

The suit, filed in Superior Court here, asked total punitive damages of "at least $300,000" and general damages of "at least $5,000" for each plaintiff as well as legal costs.

Motions in IBM Case Put Under Advisement

SAN FRANCISCO – Judge Ray W. McNichols took all motions under advisement at the recent pretrial hearing of consolidated cases against IBM.

IBM chief counsel Nicholas deB. Katzenbach asked the judge to postpone the Memorex trial, which is scheduled to begin in fall 1976.

Sanders Associates, whose suit has also been consolidated for discovery purposes along with the other suits, asked for relief from the time schedule set for depositions because it joined late and has considerable groundwork to catch up on. The Sanders trial will be remanded back to New Hampshire.

POSITION ANNOUNCEMENTS

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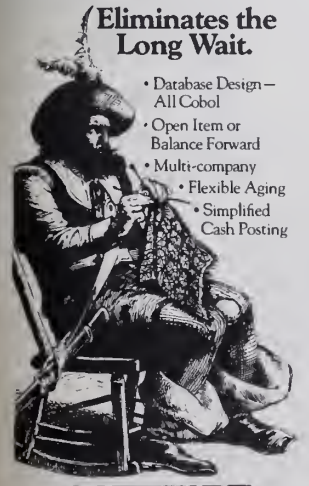

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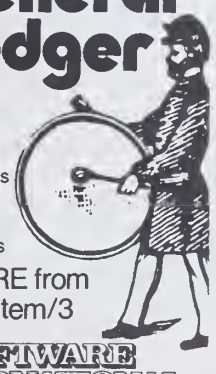

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Peripherals Orders Off

CDC Net Up 10% After First-Quarter Fall

MINNEAPOLIS – Control Data Corp.'s second-quarter earnings rose 10% over those of the year-ago period, in contrast to the firm's 28% drop during the first quarter.

Earnings for the first half fell 13% to $22.7 million or $1.36 a share compared with $26 million or $1.58 a share in the same 1974 period.

Revenues during the half rose 9% to $581.4 million compared with $532.7 million.

During the quarter, earnings from CDC's computer business declined slightly to $1.76 million from $1.79 million in the year-ago period. CDC said computer sales revenues declined, but rental revenue "continued strong."

Peripherals Orders Decline

Orders for peripherals during the quarter showed a "notable decline" as a result of inventory reduction plans by several OEM customers.

"This trend will affect shipment schedules in the next several quarters," observed Chairman William C. Norris.

Commercial Credit Co., a subsidiary, reported earnings rose to $9.9 million from $8.9 million.

During the quarter, CDC earned $11.7 million or 69 cents a share compared with $10.7 million or 64 cents a share in the same 1974 period.

Revenues climbed 6% to $299.4 million compared with a year-earlier $283.3 million.

Norris said computer business results are expected to improve gradually during the rest of the year while Commercial Credit's finance business "should continue to show strength."

However, he noted, "little immediate change is foreseen in the adverse trend of high claims costs and inadequate rate increases permitted in Commercial Credit's insurance operations."

NCR Results 3% Greater Than Year-Ago Six Months

DAYTON, Ohio – NCR Corp.'s second-quarter earnings declined 7% from last year's record for the period, while six-month results managed to rise 3% above those of the year-ago period.

Chairman William S. Anderson said he expects 1975 results to exceed those of 1974.

International revenues and earnings, although ahead of those in last year's second quarter, were not sufficient to compensate for the squeeze in domestic earnings, as was the case in the first quarter, he said.

Computer bookings are up 23% in the U.S. and 13% abroad compared with last year's six months and incoming business is running slightly ahead of last year, he said.

But orders for retail point-of-sale (POS) equipment "are being adversely affected by the deferral of planned expansion programs by some retail organizations because of current business conditions," he said.

During the quarter, revenues rose 8% to $516.5 million compared with $477.3 million in the year-ago period.

Earnings totaled $18.5 million or 73 cents a share compared with $19.8 million or 81 cents a share in the same period last year.

For the six months, revenues rose 15% to $995.4 million compared with $864.5 million during the same 1974 period.

Earnings rose to $32.8 million or $1.32 a share compared with $31.9 million or $1.32 a share last year.

NCR has taken a number of cost-reduction measures for the rest of the year, including "modest" manpower reductions in several areas and also some reduction in R&D expenditures, Anderson said.

Earnings at Burroughs Jump 16% In Half Year, 13% in Quarter

DETROIT – Burroughs Corp. keeps on rolling up those earnings increases, this time a 16% jump in the first six months and a 13% rise in the second quarter over comparable 1974 periods.

During the six months, earnings rose to $64.1 million or $1.62 a share compared with $55.3 million or $1.42 a share in the same year-ago period.

Revenues for the half year rose 11% to $782.1 million compared with $701.8 million last year.

Quarterly earnings reached $38.4 million or 97 cents a share, up 13% over $33.9 million or 87 cents a share in the year-ago period.

Revenue for the quarter rose 10% to $416.9 million compared with last year's second-quarter figure of $379 million.

Incoming orders for the first six months increased 4% over the high level recorded in last year's six-month period, said Chairman Ray W. MacDonald.

Datapoint Nine Months Improved

SAN ANTONIO, Texas – Datapoint Corp.'s earnings and revenues climbed during both the third quarter and nine months compared with those of similar 1974 periods.

H.E. O'Kelley, chief executive officer, said he expects the firm's 1975 income before tax credits will be in the lower range of a 30% to 40% increase over that of 1974.

During the quarter, earnings rose to $1.1 million or 50 cents a share compared with $937,000 or 46 cents a share in the year-ago period.

Revenues rose to $12.3 million compared with $10.3 million in the same period last year.

Nine-month revenues rose to $33.2 million compared with nearly $25 million in the 1974 period.

Earnings, including a $975,000 tax credit, rose to $3.1 million or $1.48 a share compared with $2.5 million or $1.23 a share when there was a $825,000 tax credit last year.

Earnings Reports

ELECTRONIC ASSISTANCE
Three Months Ended April 30

	1975	1974
Shr Ernd	.....	$.08
Revenue	$7,626,000	9,106,000
Tax Cred	.....	42,000
Earnings	(233,000)	145,000

MULTIPLE ACCESS
Year Ended March 31

	1975	1974
Shr Ernd	$.55	$.94
Revenue	35,672,850	19,307,410
Tax Cred	1,810,000	1,598,400
Earnings	1,564,570	2,334,772

INCOTERM
Three Months Ended May 24

	1975	1974
Shr Ernd	$.36	.....
Revenue	7,612,000	$2,851,000
Tax Cred	193,000	.....
Earnings	713,000	(786,000)

COMPUTER CONSOLES
Three Months Ended March 31

	1975	1974
Shr Ernd	$.16	$.26
Revenue	2,183,454	1,967,865
Tax Cred	109,000	220,000
Earnings	228,990	439,360

CENTRAL DATA SYSTEMS
Three Months Ended Feb. 28

	a1975	1974
Shr Ernd	$.25	$.20
Revenue	2,496,000	2,424,000
Earnings	113,000	92,000
9 Mo Shr	.76	.60
Revenue	8,008,000	6,669,000
Earnings	348,000	275,000

a-Reflects change to Llfo method of inventory valuation.

MEMOREX
Three Months Ended March 31

	1975	a1974
Shr Ernd	$.36	.....
Revenue	61,625,000	$48,803,000
Tax Cred	575,000	.....
Earnings	1,583,000	(1,607,000)

a-Restated to reflect $1.6 million increase from change in accounting method for foreign translation adjustments related to long-term debt.

BARRY WRIGHT
Three Months Ended June 30

	1975	a1974
Shr Ernd	$.33	$.29
Revenue	10,849,568	11,760,215
Earnings	535,674	474,619
6 Mo Shr	.46	.53
Revenue	21,096,907	22,751,504
Earnings	755,644	866,190

a-Restated to reflect change to Lifo method of accounting for about 50% of inventories.

COMPUGRAPHIC
Three Months Ended June 28

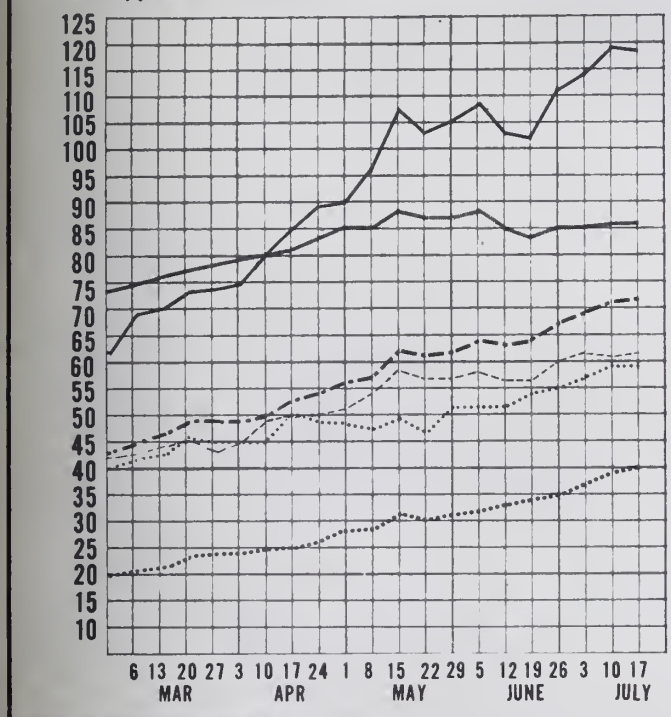
	1975	1974
Shr Ernd	$.84	$.70
Revenue	19,117,000	16,679,000
Earnings	1,566,000	1,289,000
9 Mo Shr	2.35	1.96
Revenue	55,852,000	45,848,000
Earnings	4,323,000	3,603,000

CONTROL DATA
Three Months Ended June 30

	1975 (000)	a1974 (000)
Shr Ernd	$.69	$.64
Revenue	299,375	283,310
Spec Cred	50	227
Earnings	11,685	10,652
6 Mo Shr	1.36	1.58
Revenue	581,380	532,730
Spec Cred	200	500
Earnings	22,741	25,993

a-Restated to reflect an accounting change.

COMPUTERWORLD Computer Stocks Trading Indexes



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TRADE*QUOTES

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, JULY 16, 1975

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

EXCH		1975 RANGE (1)	CLOSE JUL 16 1975	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	62-109	105 1/2	-2 3/4	-2.5
C	COMPUTER AUTOMATION	2- 10	9 7/8	+ 1/2	+5.3
N	CONTROL DATA CORP	11- 23	19 3/4	-1 1/8	-5.3
N	DATA GENERAL CORP	10- 38	36 5/8	- 7/8	-2.3
C	DATAPOINT CORP	6- 26	24	- 1/4	-1.0
C	DIGITAL COMP CONTROL	1- 4	3 1/4	0	0.0
N	DIGITAL EQUIPMENT	46-122	119 3/8	+ 3/8	+0.3
N	ELECTRONIC ASSOC.	2- 3	2 7/8	- 1/8	-4.1
A	ELECTRONIC ENGINEER.	5- 10	10	- 3/8	-3.6
N	FOXBORO	23- 42	39 3/8	-1 3/8	-3.3
C	GENERAL AUTOMATION	6- 14	12 1/2	0	0.0
C	GRI COMPUTER CORP	1- 1	1/2	0	0.0
N	HEWLETT-PACKARD CO	58-120	116 1/2	-3	-2.5
N	HONEYWELL INC	22- 40	35 1/4	-2 5/8	-6.9
N	IBM	150-224	204 5/8	-4 7/8	-2.3
C	MEMOREX	1- 10	9 1/2	+ 5/8	+7.0
C	MICRODATA CORP	2- 6	5 3/4	+1 1/4	+27.7
C	MODULAR COMPUTER SYS	5- 19	18	-1 1/4	-6.4
N	NCR	15- 39	32 7/8	-1 7/8	-5.3
N	PERKIN-ELMER	16- 30	28	+ 1/8	+0.4
N	RAYTHEON CO	26- 59	55 1/4	-1 3/4	-3.0
N	SINGER COMPANY	10- 17	15 5/8	-1 1/8	-6.7
N	SPERRY RAND	26- 49	46 1/4	- 5/8	-1.3
A	SYSTEMS ENG. LABS	1- 5	4	- 1/8	-3.0
C	ULTIMATE SYSTEMS INC	1- 6	7 1/2	- 3/8	-4.7
N	VARIAN ASSOCIATES	7- 18	15 1/4	-2 1/2	-14.0
N	WANG LABS.	7- 17	16	+ 3/4	+4.9
N	XEROX CORP	51- 86	69 1/4	- 3/4	-1.0
	LEASING COMPANIES				
C	COMDISCO INC	1- 5	4 1/2	- 1/8	-2.7
A	COMMERCE GROUP CORP	2- 4	3	- 1/4	-7.6
A	COMPUTER INVSTRS GRP	1- 2	1 1/8	- 1/8	-10.0
M	CATRONIC RENTAL	1- 1	5/8	0	0.0
A	CCL INC	1- 1	1/2	0	0.0
N	CPT INC	3- 6	5 1/4	- 1/2	-8.6
C	EDP RESOURCES	2- 2	2	0	0.0
A	GRANITE MGT	1- 5	4 1/8	+ 1/8	+3.1
A	GREYHOUND COMPUTER	2- 3	3	0	0.0
A	ITEL	3- 9	9	+ 3/4	+9.0
N	LEASCO CORP	4- 8	6 3/8	0	0.0
C	LEASPAC CORP	1- 1	1/4	0	0.0
C	LECTRO MGT INC	1- 1	1/8	0	0.0
C	NRG INC	1- 4	3 5/8	- 1/2	-12.1
A	PIONEER TEX CORP	2- 7	6 1/2	+ 1/2	+8.3
A	ROCKWOOD COMPUTER	1- 1	5/8	0	0.0
N	U.S. LEASING	9- 14	13	+1 1/2	+13.0

EXCH		1975 RANGE (1)	CLOSE JUL 16 1975	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
C	ADVANCED COMP TECH	1- 1	3/4	0	0.0
A	APPLIED DATA RES.	1- 10	2 1/2	+ 3/8	+17.6
N	AUTOMATIC DATA PROC	29- 65	64 1/4	+2 1/2	+4.0
C	BRANDON APPLIED SYST	1- 1	1/4	0	0.0
C	CENTRAL DATA SYSTEMS	0- 0	5 1/2	0	0.0
C	COMPUTER DIMENSIONS	2- 6	4 1/2	- 1/4	-5.2
C	COMP ELECTION SYSTMS	3- 6	4 1/2	0	0.0
C	COMPUTER HORIZONS	1- 1	3/4	0	0.0
C	COMPUTER NETWORK	1- 3	2 7/8	- 3/8	-11.5
N	COMPUTER SCIENCES	2- 6	5 5/8	+ 1/8	+2.2
C	COMPUTER TASK GROUP	1- 1	5/8	0	0.0
C	COMPUTER USAGE	2- 4	2 1/2	0	0.0
C	COMSHARE	3- 4	3 3/8	- 1/4	-6.8
C	CATAT88	1- 1	1 1/4	0	0.0
A	ELECT CORP PROG	1- 1	1/4	0	0.0
N	ELECTRONIC DATA SYS.	12- 28	23 3/4	+1 3/8	+6.1
C	INFONATIONAL INC	1- 1	1/8	0	0.0
C	IPS COMPUTER MARKET.	1- 1	1/2	0	0.0
C	KEANE ASSOCIATES	2- 3	2 1/8	0	0.0
C	KEYDATA CORP	2- 3	2 3/4	0	0.0
C	LOGICON	3- 5	4	0	0.0
A	MANAGEMENT DATA	1- 3	2 1/4	+ 1/4	+12.5
C	NATIONAL CSS INC	6- 14	11 1/2	- 1/2	-4.1
C	NATIONAL COMPUTER CO	1- 1	1/8	0	0.0
A	ON LINE SYSTEMS INC	8- 15	17	+1 3/4	+11.4
N	PLANNING RESEARCH	2- 6	4 7/8	- 1/8	-2.5
C	PROGRAMMING & SYS	1- 1	3/4	0	0.0
C	RAPIDATA INC	2- 5	4 1/2	- 1/4	-5.2
C	SCIENTIFIC COMPUTERS	1- 1	1	0	0.0
C	SIMPLICITY COMPUTER	1- 1	1/4	0	0.0
C	TYMSHARE INC	7- 21	20 1/4	+ 1/4	+1.2
A	URS SYSTEMS	2- 4	3 5/8	+ 1/2	+16.0
N	WYLY CORP	2- 4	4 1/8	+ 7/8	+26.9
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	4- 9	8 1/4	- 1/4	-2.9
C	ADVANCED MEMORY SYS	1- 7	6 3/8	- 3/8	-5.5
N	AMPEX CORP	3- 7	7 1/8	+1	+16.3
C	ANDERSON JACOBSON	1- 3	3	+ 1/2	+20.0
C	BEEHIVE MEDICAL ELEC	1- 5	4 1/2	+ 1/8	+2.8
A	BOLT,BERANEK & NEW	5- 13	11 1/2	-1 3/8	-10.6
N	BUNKER-RAMO	4- 8	7 3/4	+ 3/4	+10.7
A	CALCOMP	4- 7	6 1/2	+ 1/4	+4.0
C	CAMBRIDGE MEMORIES	3- 5	4 1/2	+ 1/8	+2.8
N	CENTRONICS DATA COMP	7- 25	22 7/8	- 7/8	-3.6
C	CODEX CORP	15- 38	36 3/4	+3 3/4	+11.3
C	COGNITRONICS	1- 2	1 5/8	- 1/8	-7.1
C	COMPUTER COMMUN.	1- 2	1 3/8	- 1/8	-8.3
C	COMPUTER CONSOLES	3- 7	5	+ 1/4	+5.2
A	COMPUTER EQUIPMENT	1- 2	1 7/8	+ 1/4	+15.3
C	COMPUTER MACHINERY	1- 2	2 1/4	+ 1/8	+5.8

EXCH		1975 RANGE (1)	CLOSE JUL 16 1975	WEEK NET CHNGE	WEEK PCT CHNGE
C	COMPUTER TRANSCEIVER	1- 2	1 1/2	0	0.0
C	COMTEN	2- 5	4 5/8	0	0.0
N	CONRAC CORP	12- 23	21	- 3/4	-3.4
C	DATA ACCESS SYSTEMS	1- 3	2 1/4	+ 1/8	+5.8
C	DATA 100	5- 16	13 1/4	- 1/2	-3.6
A	DATA PRODUCTS CORP	2- 6	5 1/2	- 1/8	-2.2
C	DATA TECHNOLOGY	1- 3	1 3/4	0	0.0
C	DATUM INC	1- 2	1 3/8	+ 1/4	+22.2
C	DECISION DATA COMPUT	4- 7	5 3/4	- 5/8	-9.8
C	DELTA DATA SYSTEMS	1- 1	1/4	0	0.0
C	DIGI-DATA CORP	1- 1	1 1/2	+ 1/8	+9.0
N	ELECTRONIC M & M	1- 3	2 3/4	+ 3/8	+15.7
C	FABRI-TEK	1- 1	1 3/8	+ 1/4	+22.2
C	GENERAL COMPUTER SYS	1- 2	1 1/2	- 1/4	-14.2
N	HAZELTINE CORP	3- 6	5 1/2	+ 3/8	+7.3
N	HARRIS CORP	18- 28	25 3/4	-1 1/2	-5.5
A	INCOTERM CORP	3- 12	11 1/4	+ 3/8	+3.4
C	INFOREX INC	2- 5	4	- 1/8	-3.0
C	INFORMATION INTL INC	8- 14	13 5/8	+ 5/8	+4.8
A	LUNDY ELECTRONICS	3- 3	2 7/8	0	0.0
C	MANAGEMENT ASSIST	1- 1	5/8	+ 1/8	+25.0
A	MILGO ELECTRONICS	9- 22	21	+1 1/2	+7.6
N	MOHAWK DATA SCI	1- 5	3 1/4	0	0.0
C	OPTICAL SCANNING	1- 3	2 3/4	0	0.0
C	PERRIL CORP	2- 2	1 7/8	0	0.0
C	PERTEC CORP	2- 8	7	+1 1/4	+21.7
A	POTTER INSTRUMENT	2- 2	1 3/4	0	0.0
C	PRECISION INST.	1- 1	1	0	0.0
C	QUANTOR CORP	2- 6	5 3/8	+ 1/8	+2.3
C	RECOGNITION EQUIP	2- 9	8 3/4	+ 5/8	+7.6
N	SANDERS ASSOCIATES	3- 11	9 7/8	- 1/4	-2.4
C	SCAN DATA	1- 3	2 3/4	+ 3/8	+15.7
C	STORAGE TECHNOLOGY	6- 17	16 1/2	- 3/4	-4.3
C	SYCOR INC	5- 15	14 3/4	+1	+7.2
C	TALLY CORP.	1- 5	3	- 1/2	-14.2
C	TEC INC	1- 3	3	0	0.0
N	TEKTRONIX INC	18- 41	41	+3 1/2	+9.3
N	TELEX	1- 3	2 5/8	- 3/8	-12.5
C	WANGCO INC	4- 8	8 1/8	+2 3/8	+41.3
C	WILTEK INC	1- 4	3	0	0.0
	SUPPLIES & ACCESSORIES				
C	BALTIMORE BUS FORMS	4- 5	4 1/2	- 1/4	-5.2
A	BARRY WRIGHT	5- 7	6 3/4	+ 5/8	+10.2
C	CYBERNATICS INC	1- 1	5/8	- 1/8	-16.6
A	DATA DOCUMENTS	29- 42	34	- 1/4	-0.7
C	DUPLEX PRODUCTS INC	12- 25	20 3/8	-2 1/8	-9.4
N	ENNIS BUS. FORMS	5- 7	5 3/4	- 1/4	-4.1
C	GRAHAM MAGNETICS	5- 10	9 3/4	+1	+11.4
C	GRAPHIC CONTROLS	8- 21	14 5/8	- 7/8	-5.6
N	3M COMPANY	43- 68	61 1/8	-3 5/8	-5.5
C	MOORE CORP LTD	39- 51	51	0	0.0
N	NASHUA CORP	15- 22	16 7/8	- 5/8	-3.5
C	REYNOLDS & REYNOLD	11- 24	17	+1 1/2	+9.6
C	STANDARD REGISTER	11- 19	18 3/4	+ 1/2	+2.7
C	TAB PRODUCTS CO	4- 8	6 1/2	0	0.0
N	LARCO	17- 24	22 1/2	+ 5/8	+2.8
C	VANIER GRAPHICS CORP	4- 7	5 1/4	0	0.0
A	WABASH MAGNETICS	3- 5	4 3/4	0	0.0
N	WALLACE BUS FORMS	15- 25	22 1/2	0	0.0

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
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